

# Upright Piano Poly Modeling

Tutorial by Charlotte





# Introduction :

Doing an object like a piano is not really difficult. If you are doing it part by part, it's just a matter of patience and a good eye for detail and proportion. The modeling part is basically just a few modified primitives like cubes or cylinders.

Before starting, the important thing is to gather a lot of references. For a vertical piano, this is simple, you can just search for a Yamaha. They are the leader in the piano market, so you can find a lot of pictures or information easily. You can stick to one model, or make you own model from different pianos. If you find close-up pictures, it's even better for details.

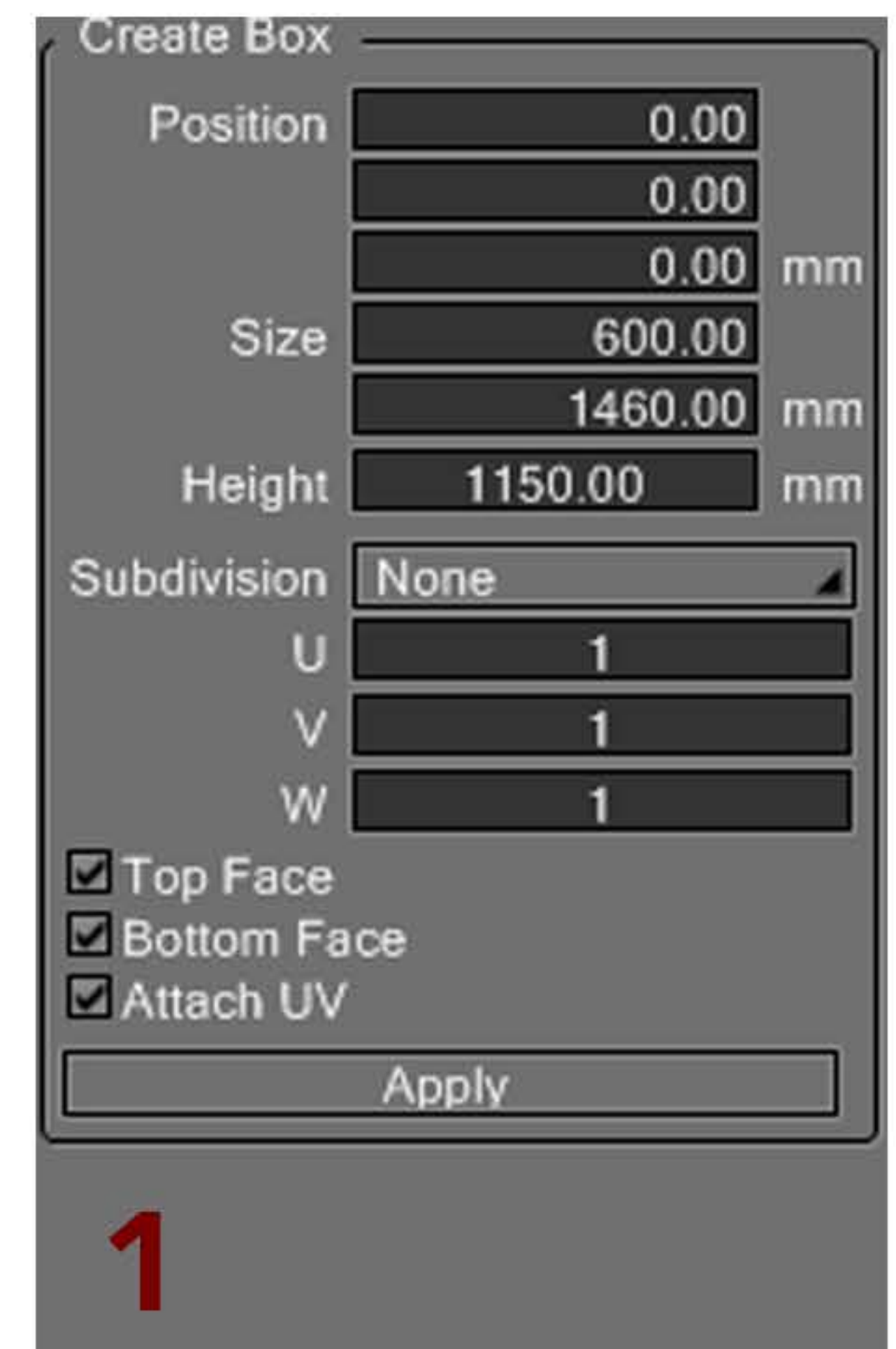
## I. The modeling part

1. We create a simple cube mesh with the dimension of a classic vertical piano. That way, we have a reference to see if our proportions are correct (picture 1).

2. After that, we start "blocking" the piano just with boxes. Be careful to place your boxes in the middle of the grid in order to easily mirror your object.

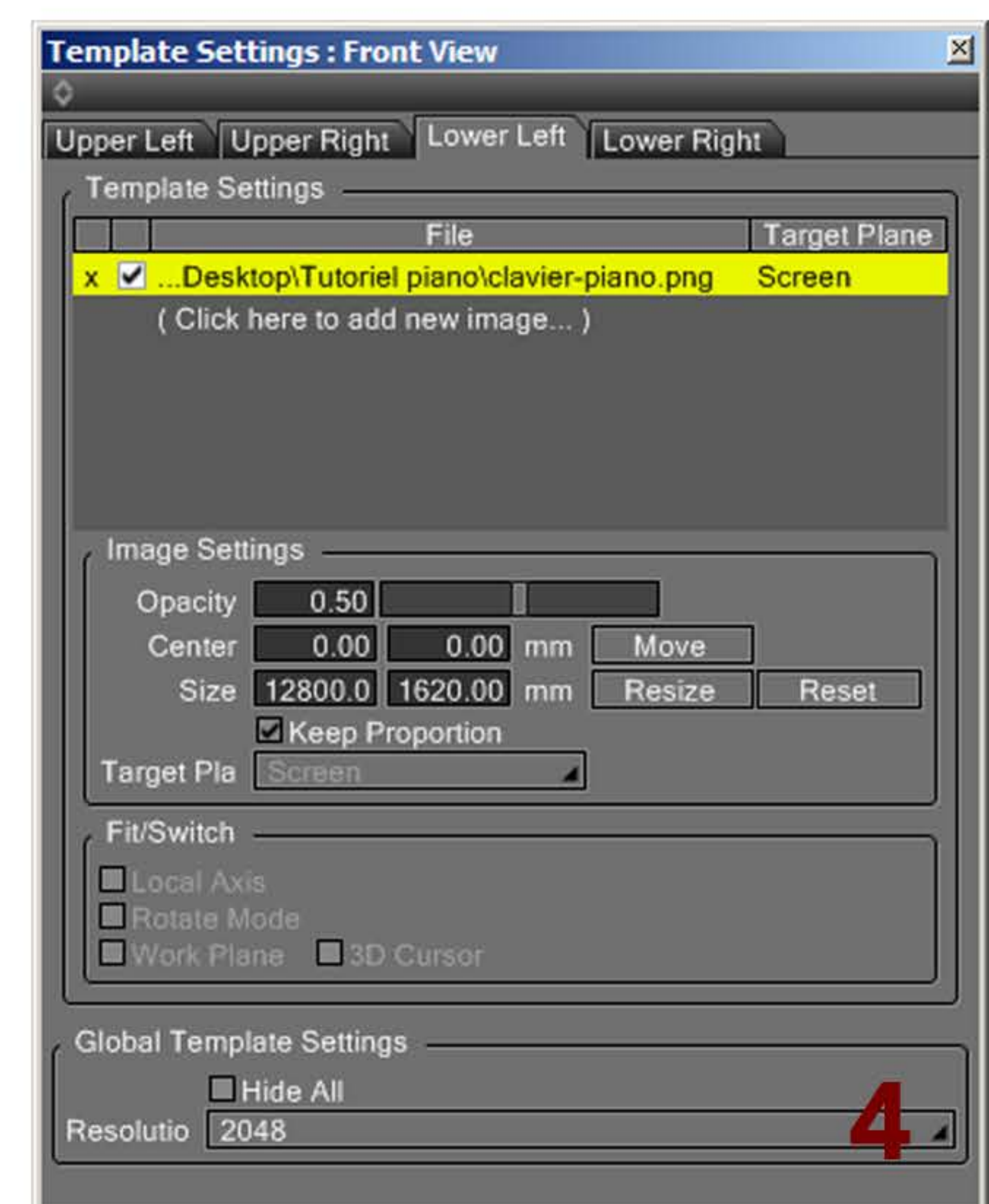
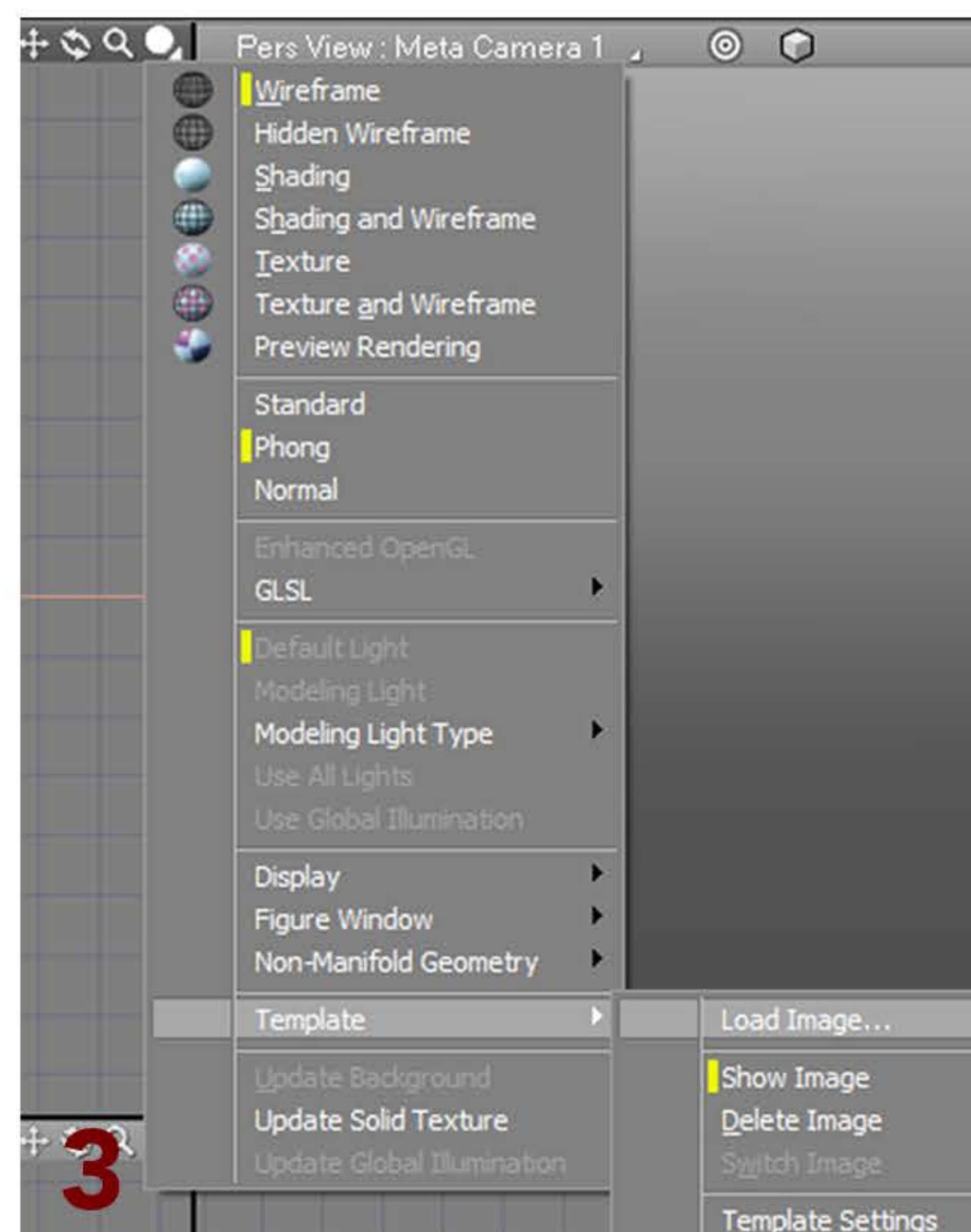
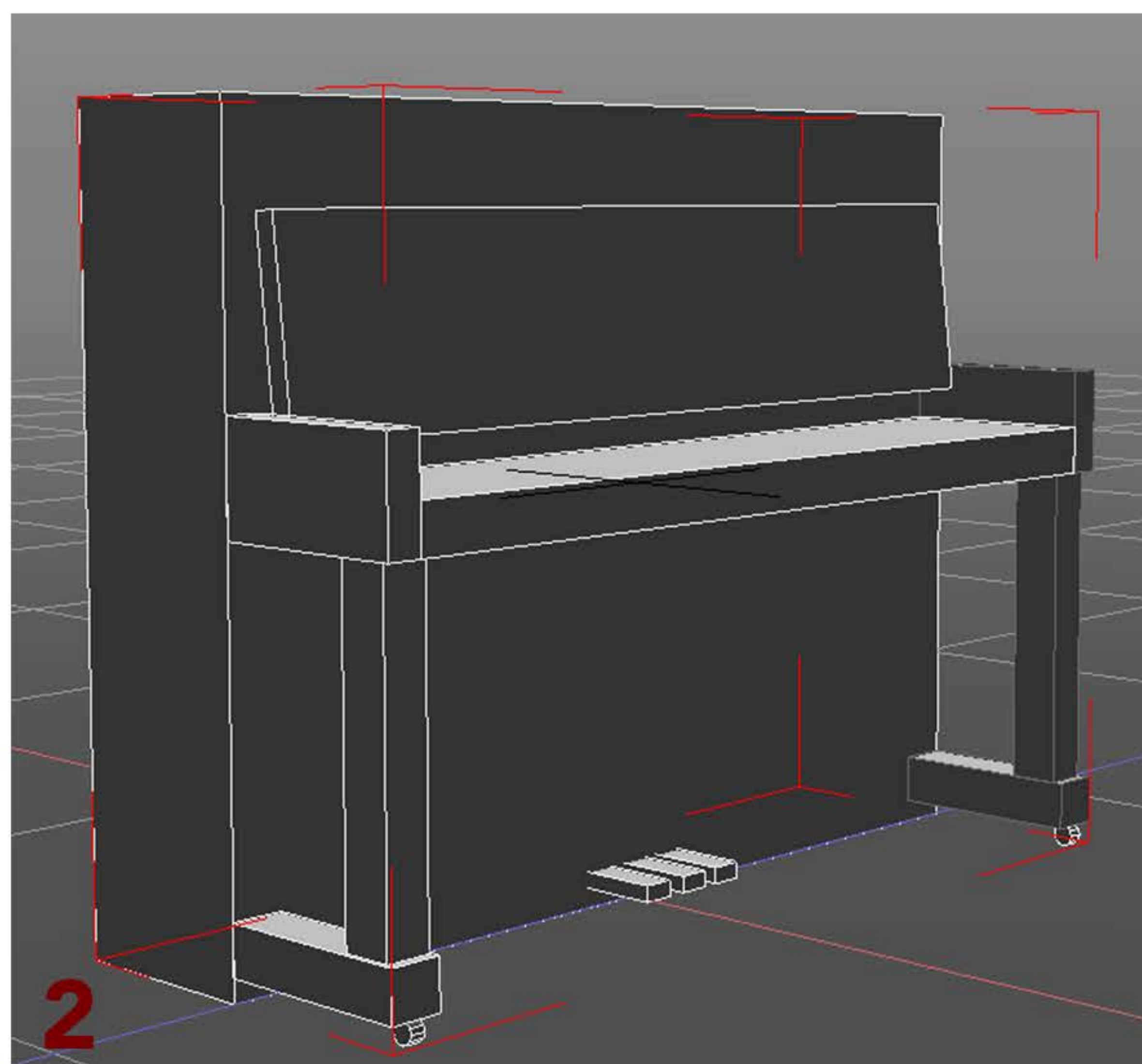
The important thing with the blocking part is to have the right proportions (check with the box you created in the first place to see if that looks ok). After, we can go further and start to detail the piano (picture 2).

If a part can be mirrored, do it. It will save time.



Look at the picture 2. As you can see, these objects are just cubes. Even if it's not detail at all, we can already see the piano's shape. **Always simplify forms at first for a better understanding of what you are doing.**

3. It's time to start the detailing process. We will start with the keyboard. First, we put an image of a keyboard as a background on the top view. The scale is not good, but it doesn't matter for now. We will adjust the scale later. If the image does not appear in good quality, you can change the resolution of it in the template settings (picture 3 and 4).



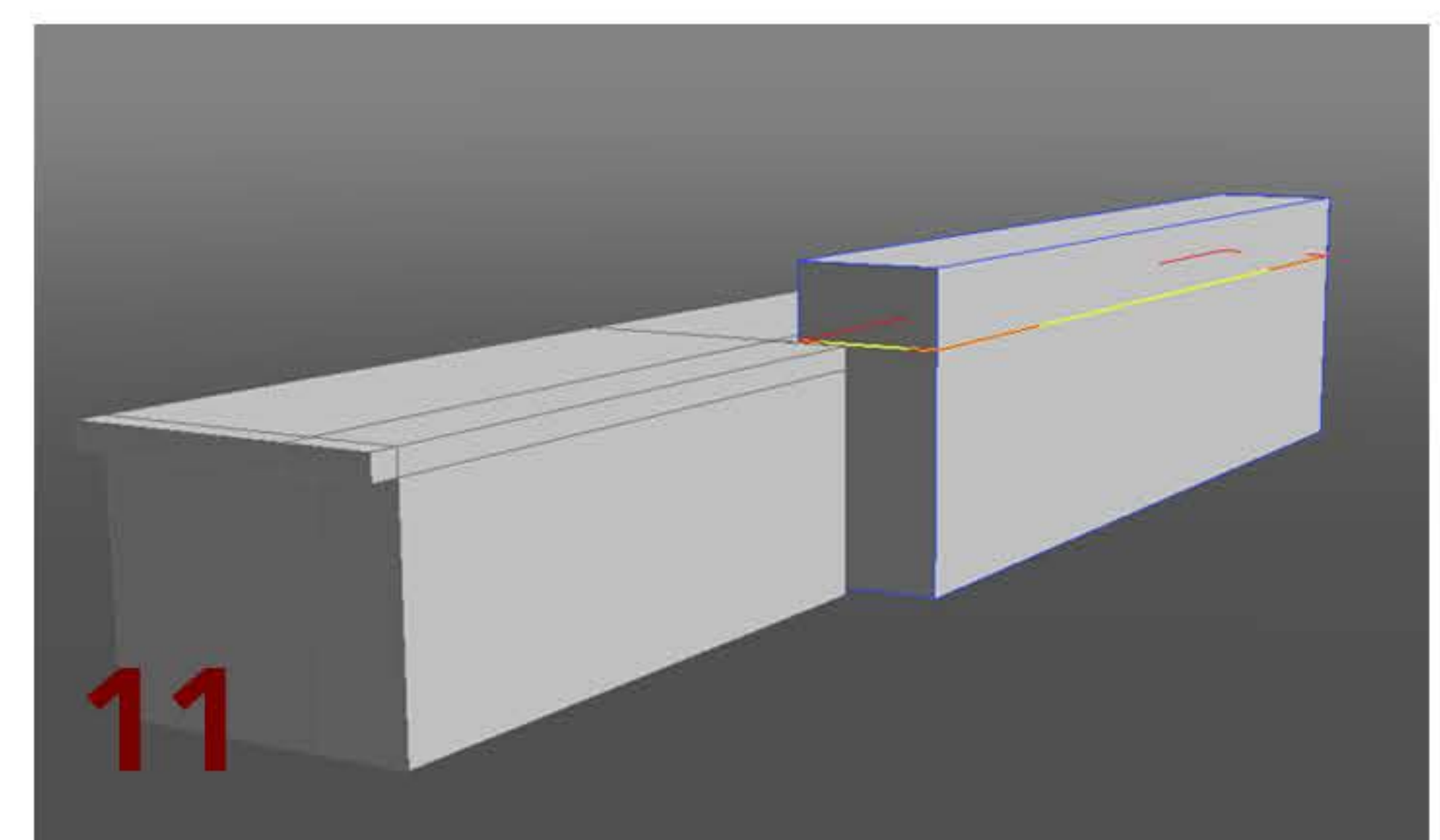
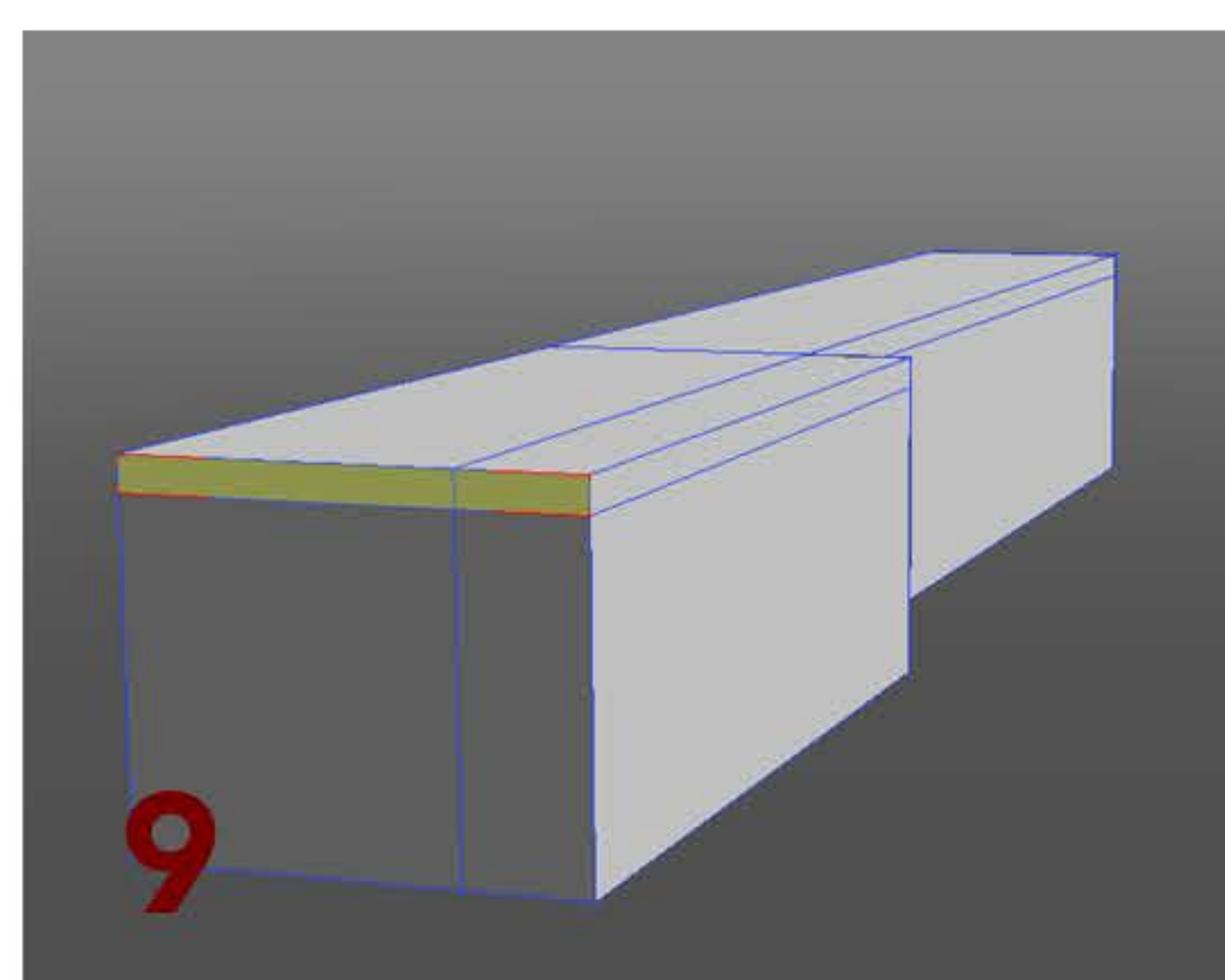
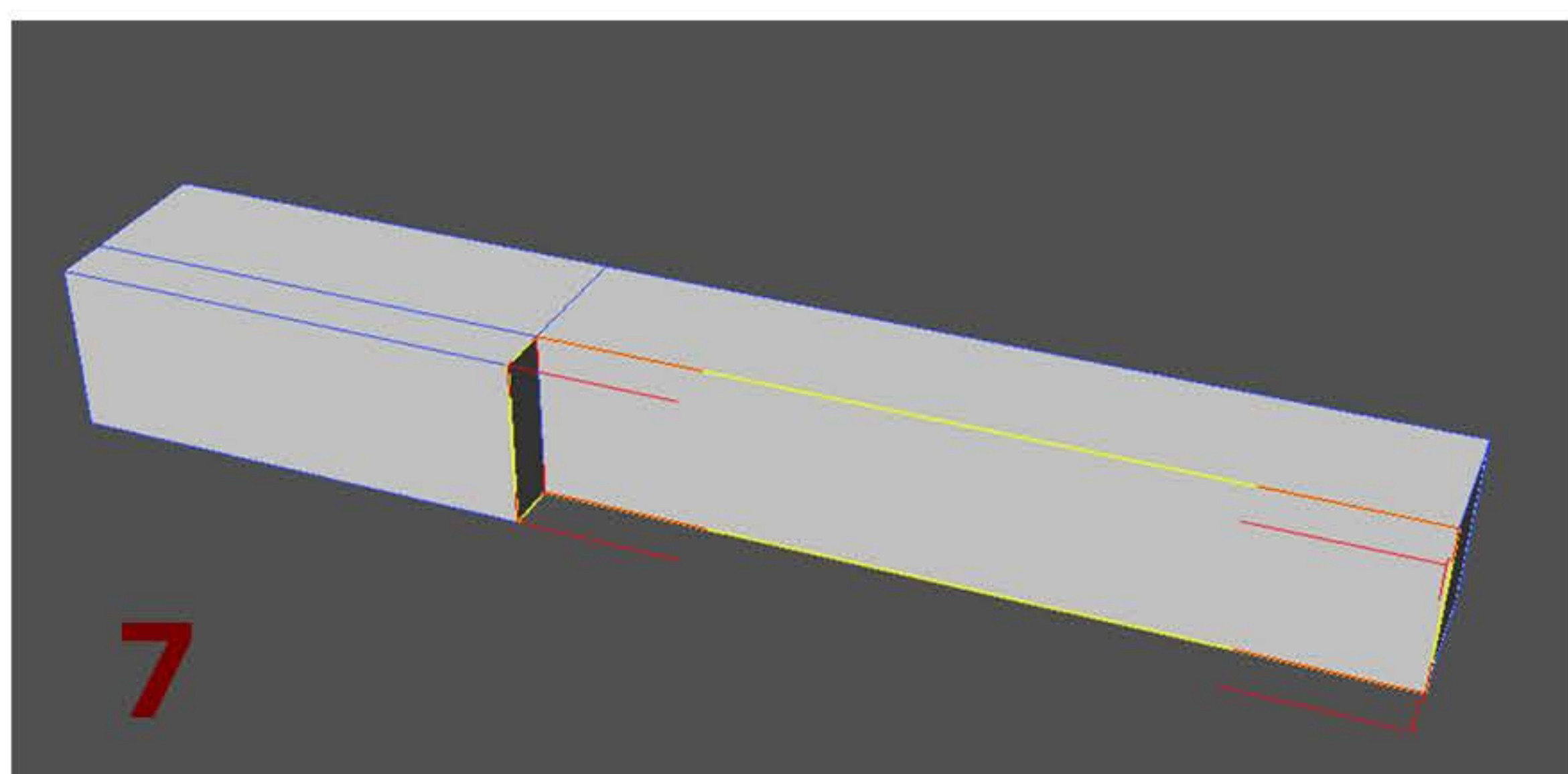
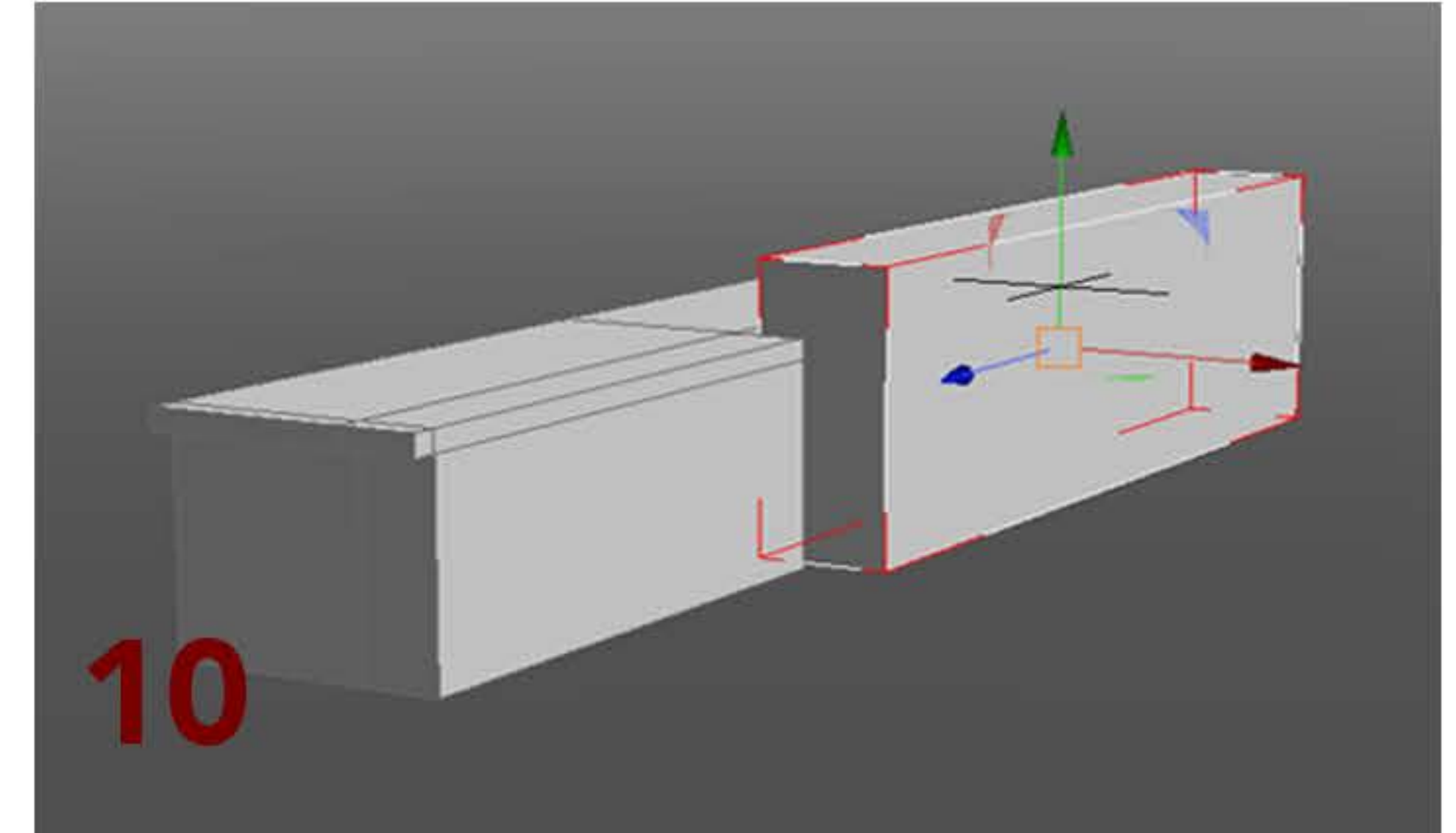
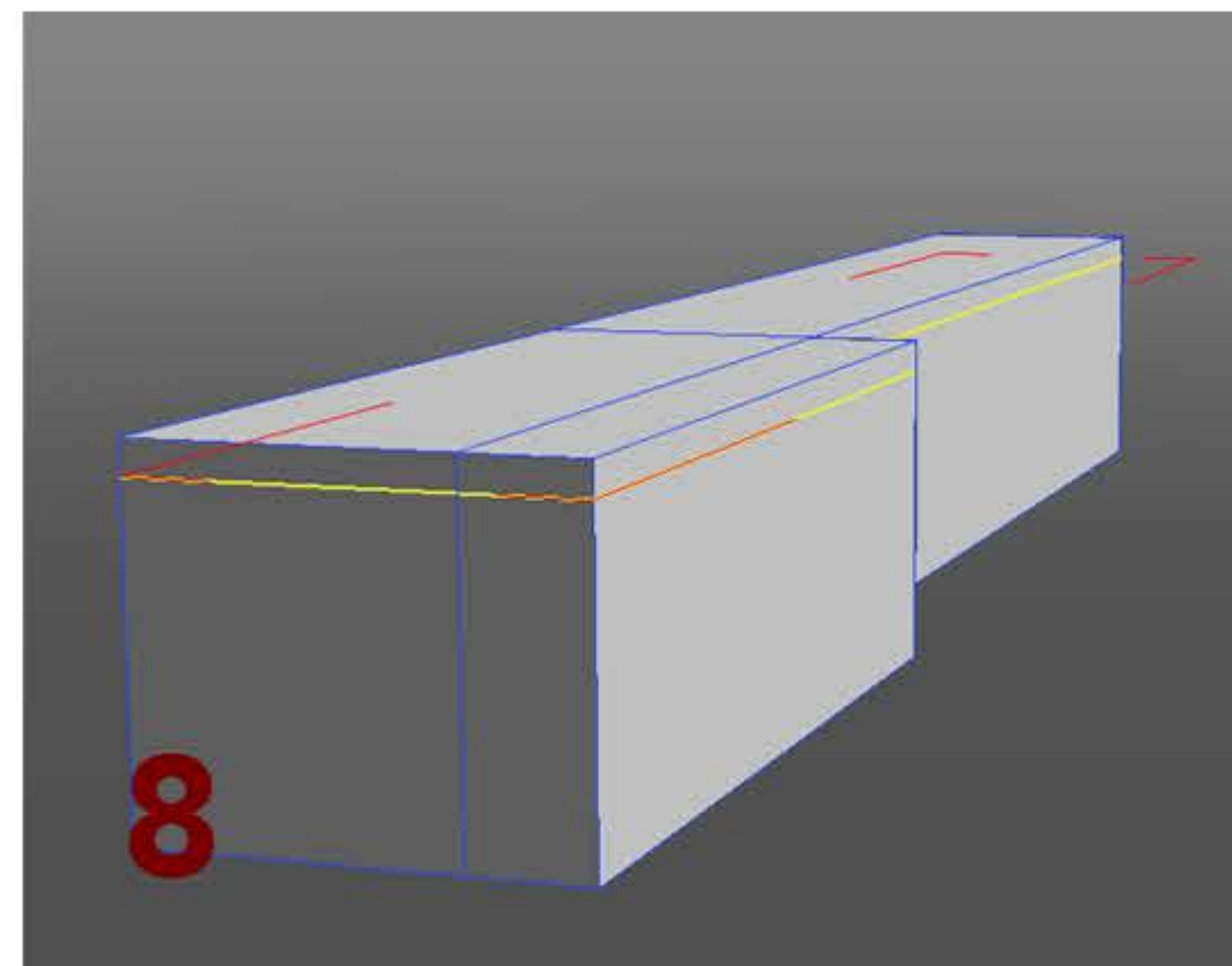
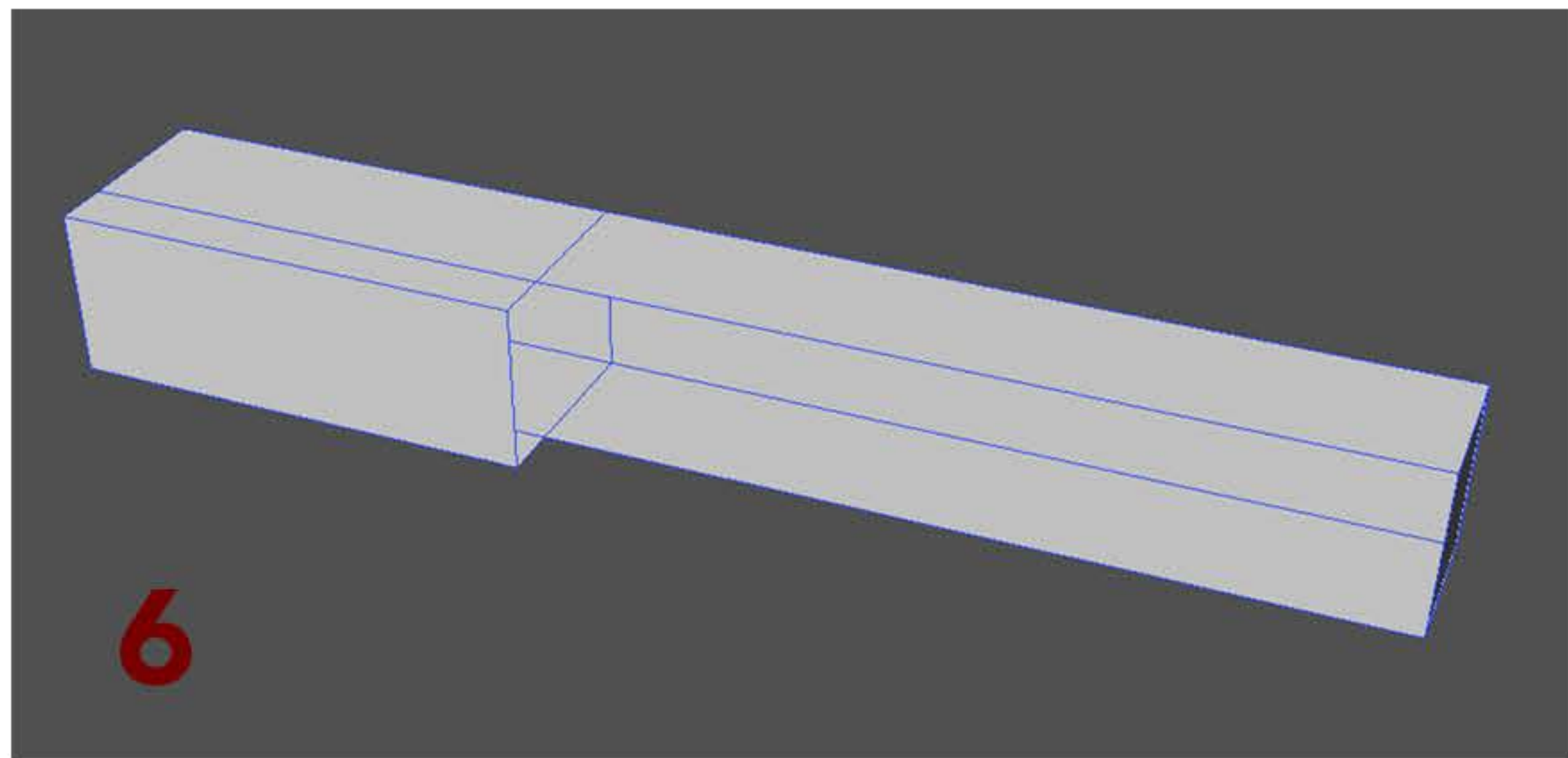
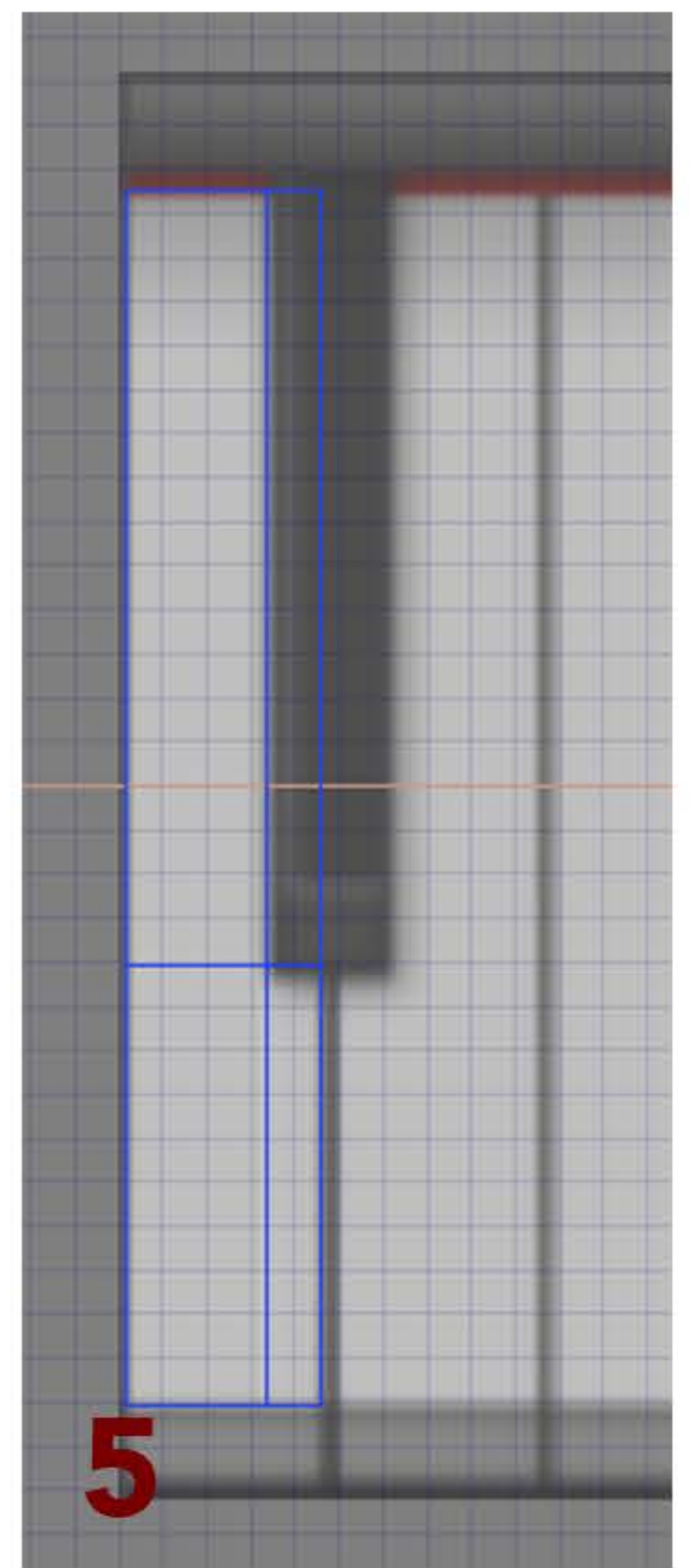


4. We will just do one black key and one white key.

We start with a box, then, I use the loop slice tool the add two loops (picture 5). The purpose of it is to create the hole where the black key will be. After that, deleted the face and close the hole with a bridge (picture 6 and 7).

Then, we create another slice in order to prepare the extrusion of the edge of the key. We select the two faces we've just created and do an extrusion from the top view. Before doing the extrusion, activate the snap tool (the "S" key on the keyboard). That way, we can do a "straight" extrusion (picture 8 and 9).

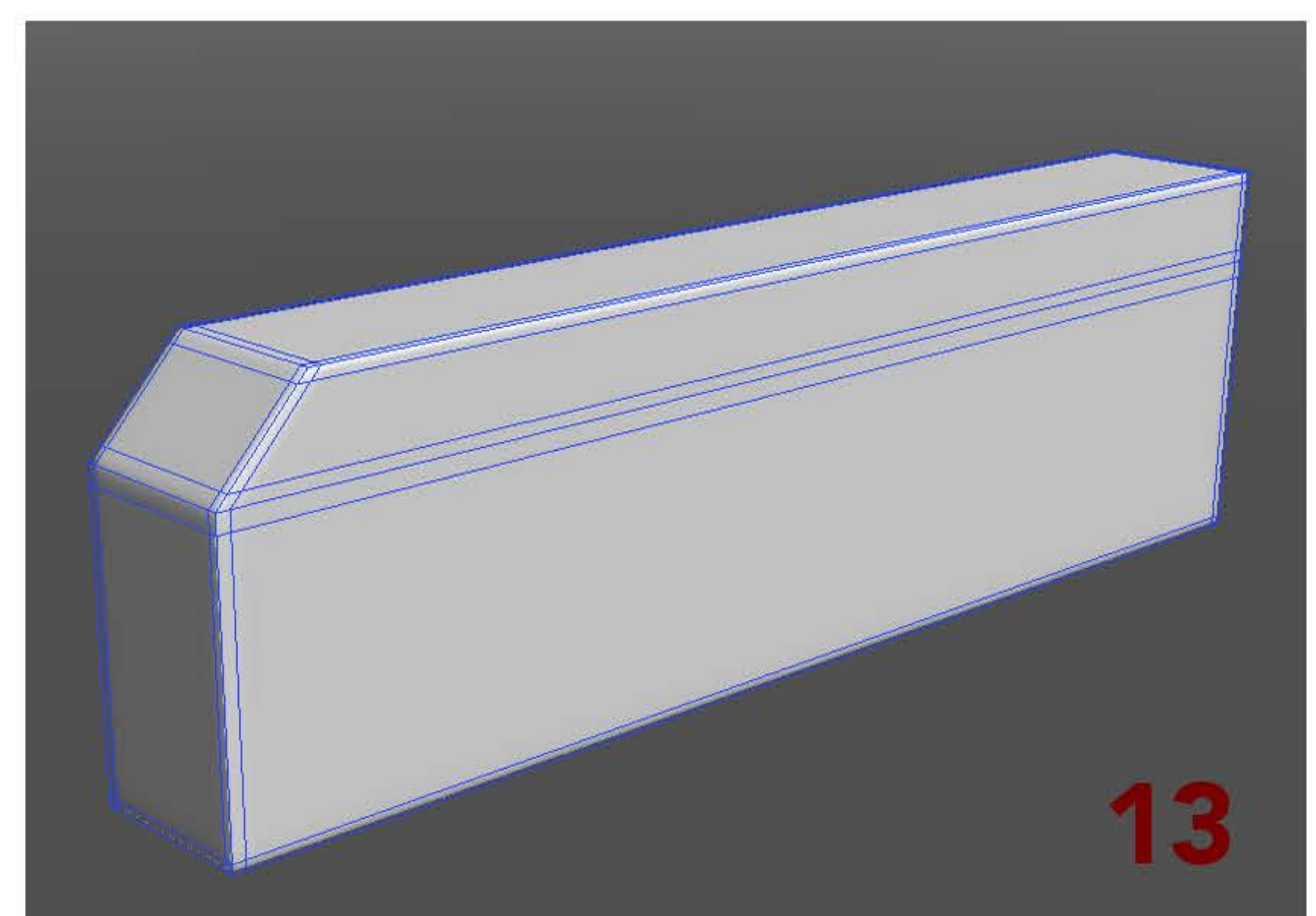
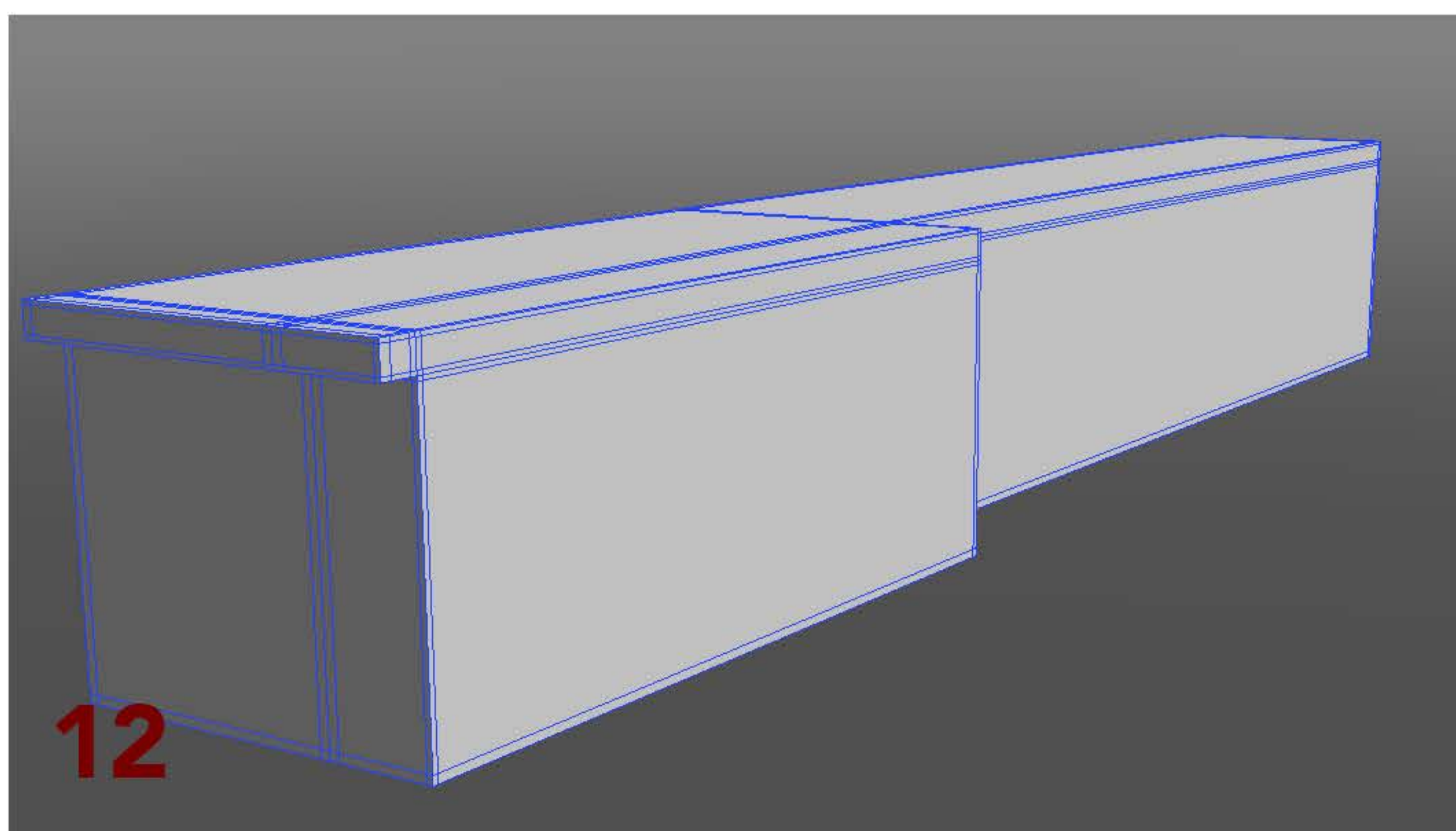
After that, we create another box for the black key. We create an edge loop with the slice loop tool in order to create the bevel (not the tool, just a bevel like in real life) on the top of the key. Then, we just have to select the top edge and backing it a little bit (picture 10 and 11).



5. Now, the two keys are almost finished. We need to create additional edges on the two keys in order to use the open subdivision surface and make the keys look more real.

On the picture 12 and 13, you can see the edges we had to create. The surface is now cleaner and realist as you can see with the light.

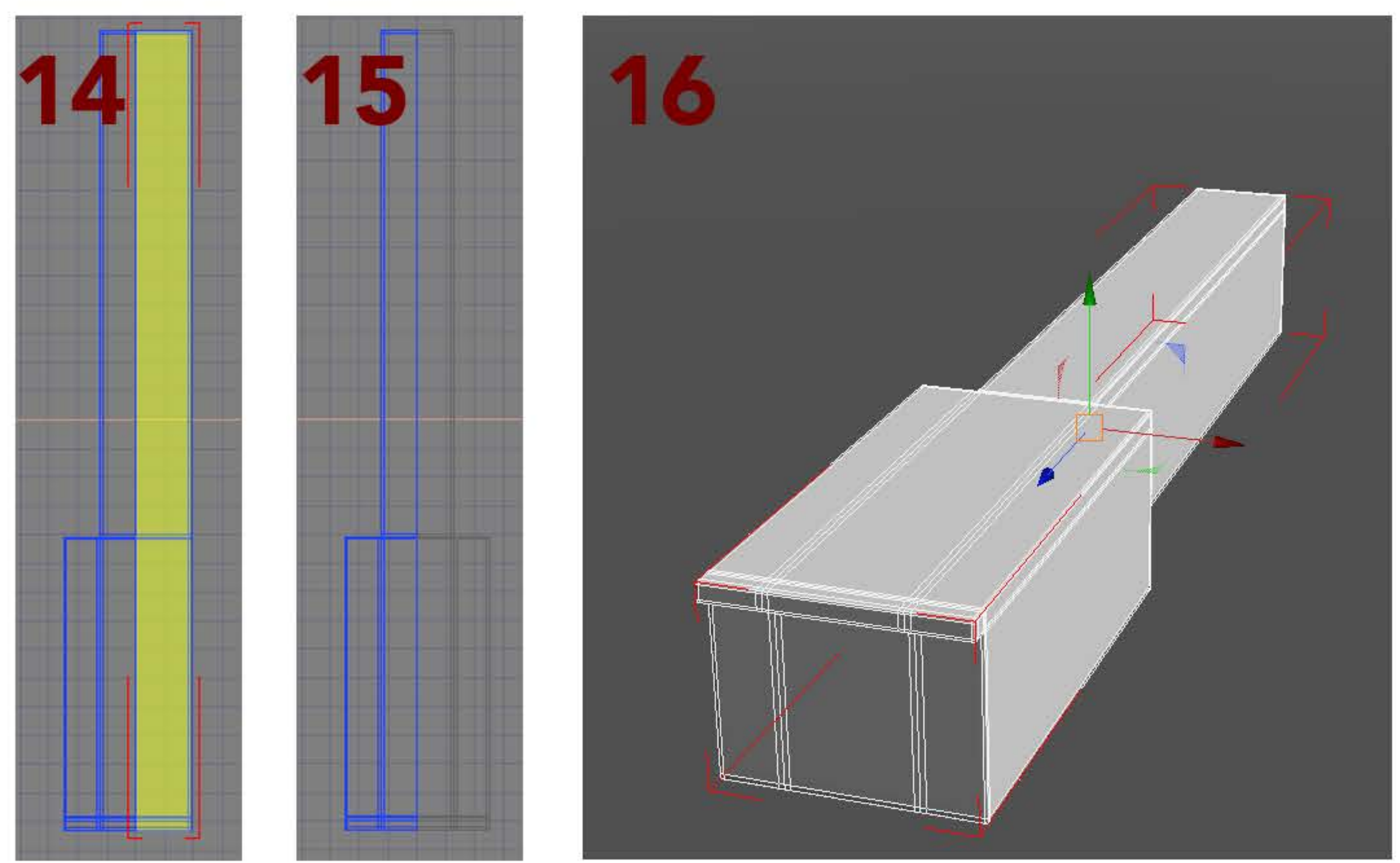
Let's do the same thing with the white key. Be careful to add as many edges as necessary. One for each corner and angle. Our two keys are done!





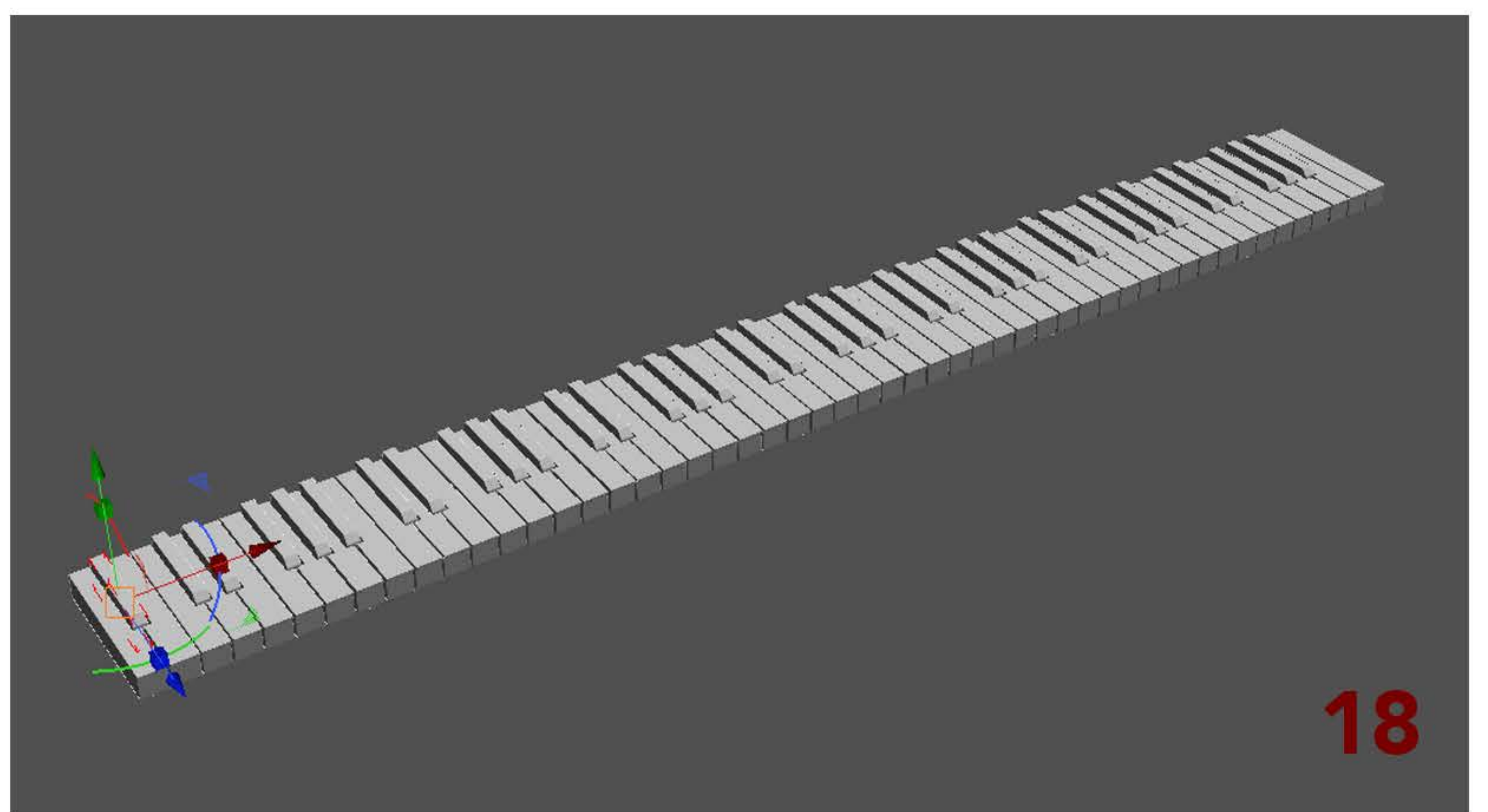
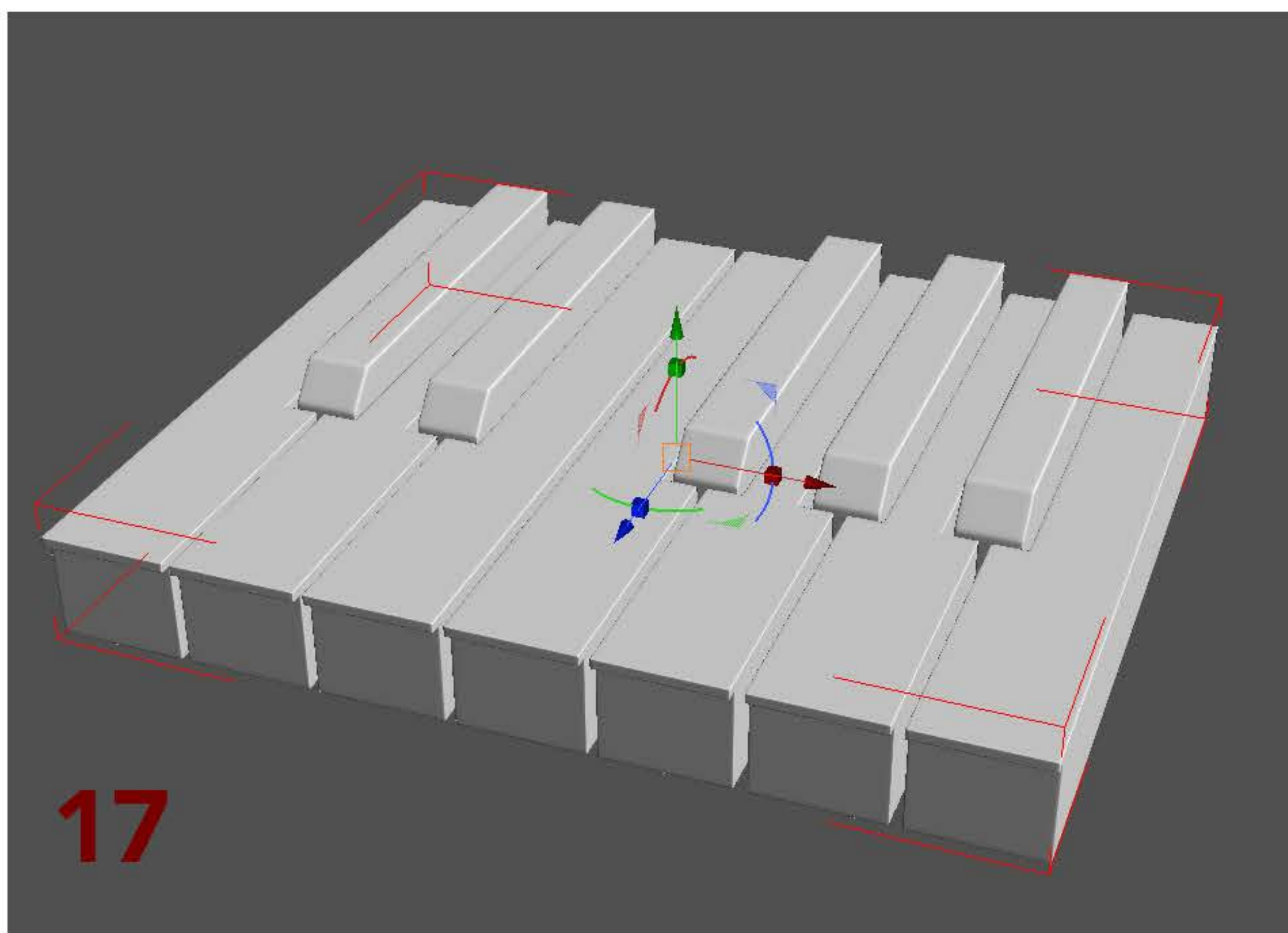
6. Now, we need two modifications on the white key. One with « two » holes and one with the hole on the other side.

For the one with the hole on the other side, we can just do a scale **-1** on the X axis. For the one with two holes : create a loop, then delete the face on the right side (picture 14). Then, do a mirror on the X axis, hit the « set bounding box max » and lock the mirror (picture 15). When the mirroring is done, you can delete the edge on the middle because it is now useless (picture 16).

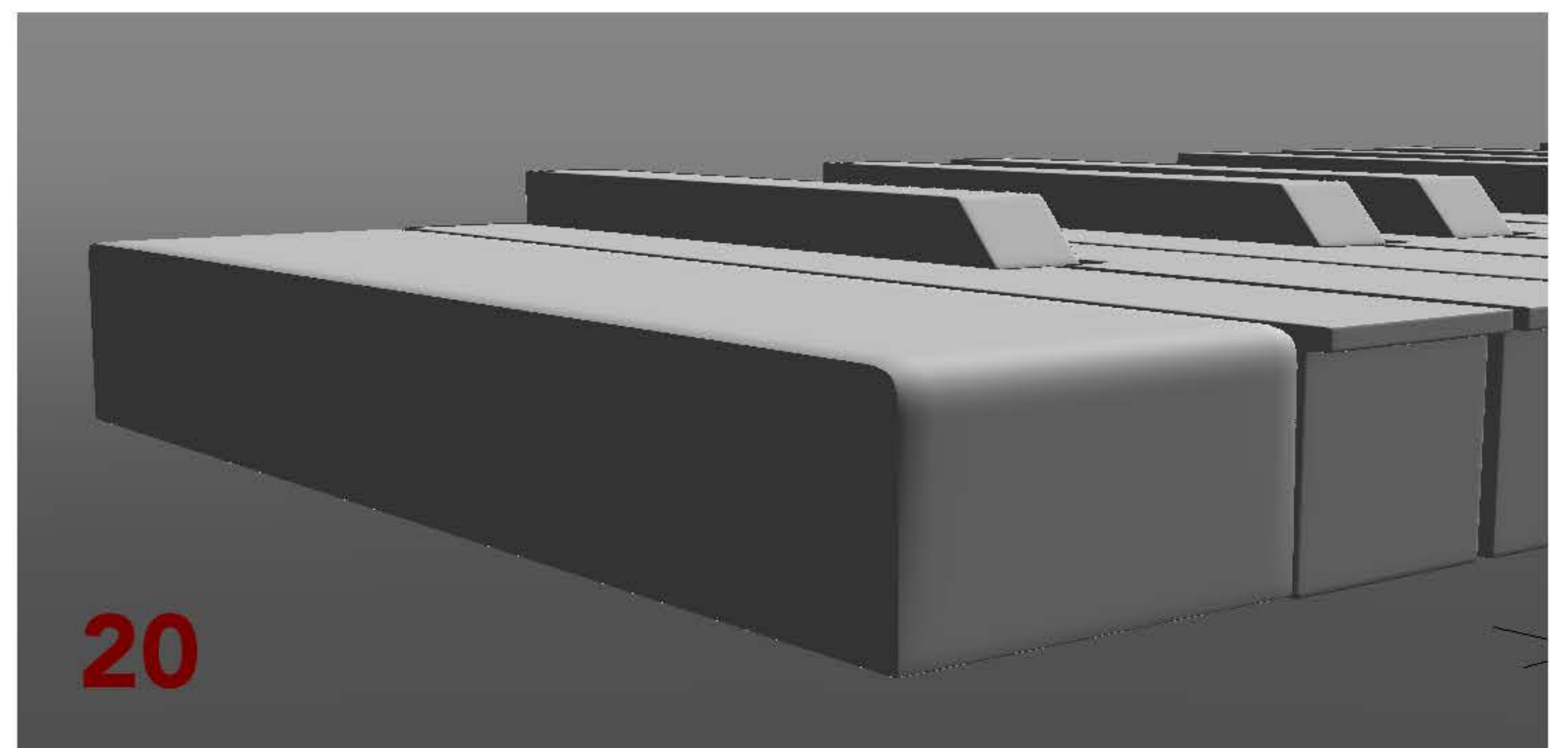
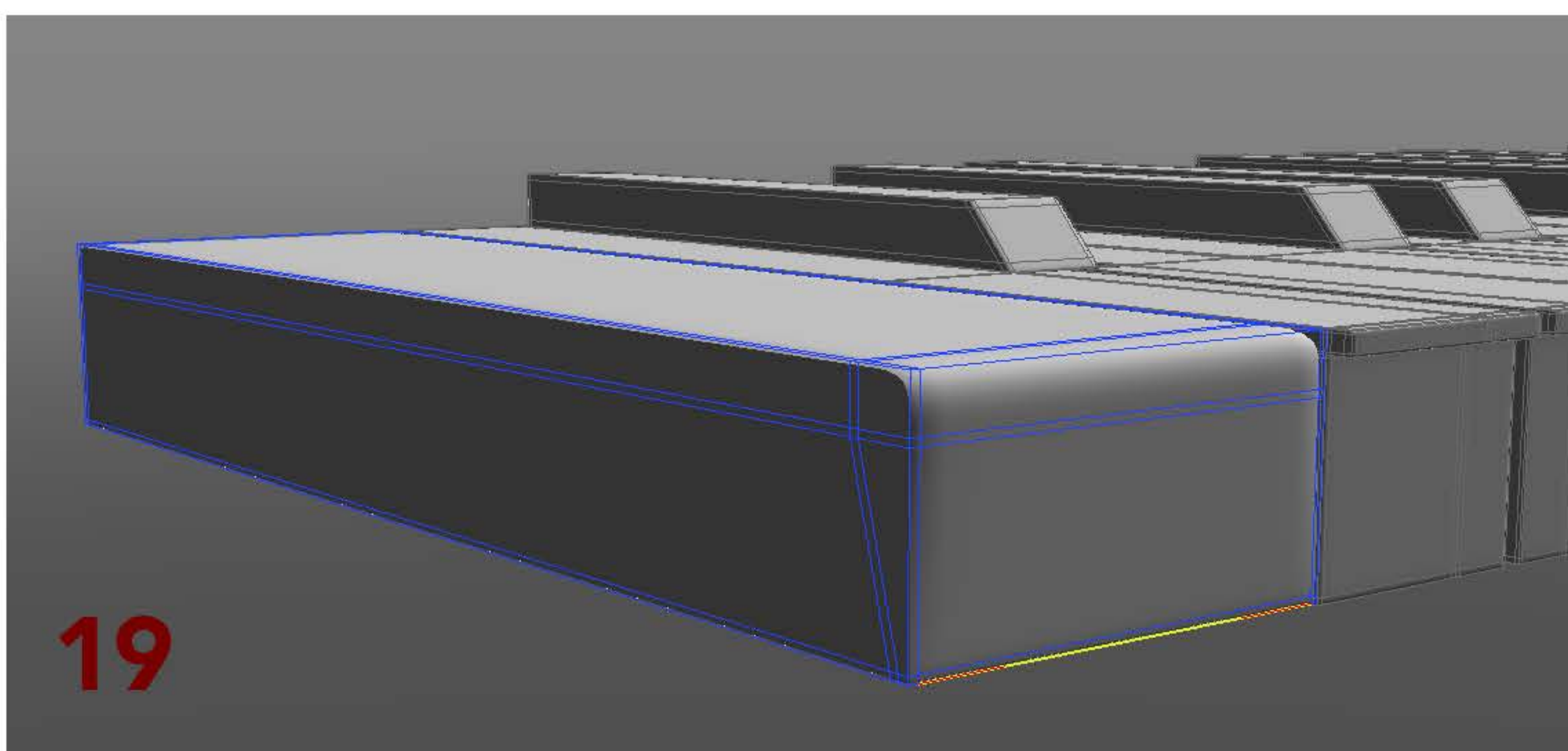


7. We just have to duplicate them in order to finish the keyboard. First, let's do an octave (picture 17). Then, with the help of the keyboard image, finish duplicating the keys (picture 18). The keys are now done! We just need to scale them at the right size and place them in the piano.

For a better organisation in the browser, you can merge all the black keys in one object and all the white keys in one object too. For that, select all the black keys, then use the right click, "merge" and merge polygon meshes. A little warning: You have to be in the Object Mode to do this manipulation! Then, we just do the same thing with the white keys.

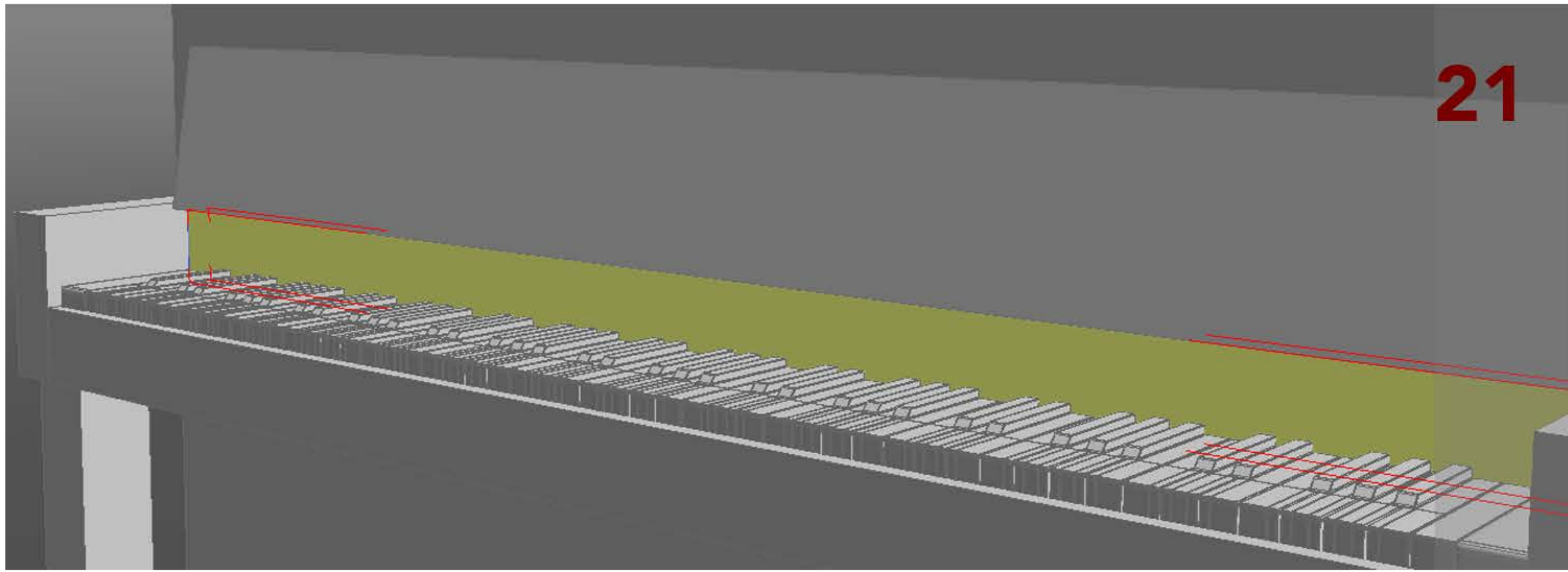


8. Now, we just need few cubes to complete the keyboard. I've added some edges with the slice loop tool, but a bit differently, so that way, we have a rounder edge (picture 19 and 20). Just duplicate the cube you just created and place it at the other end of the keyboard. You can also use the mirror if you want.

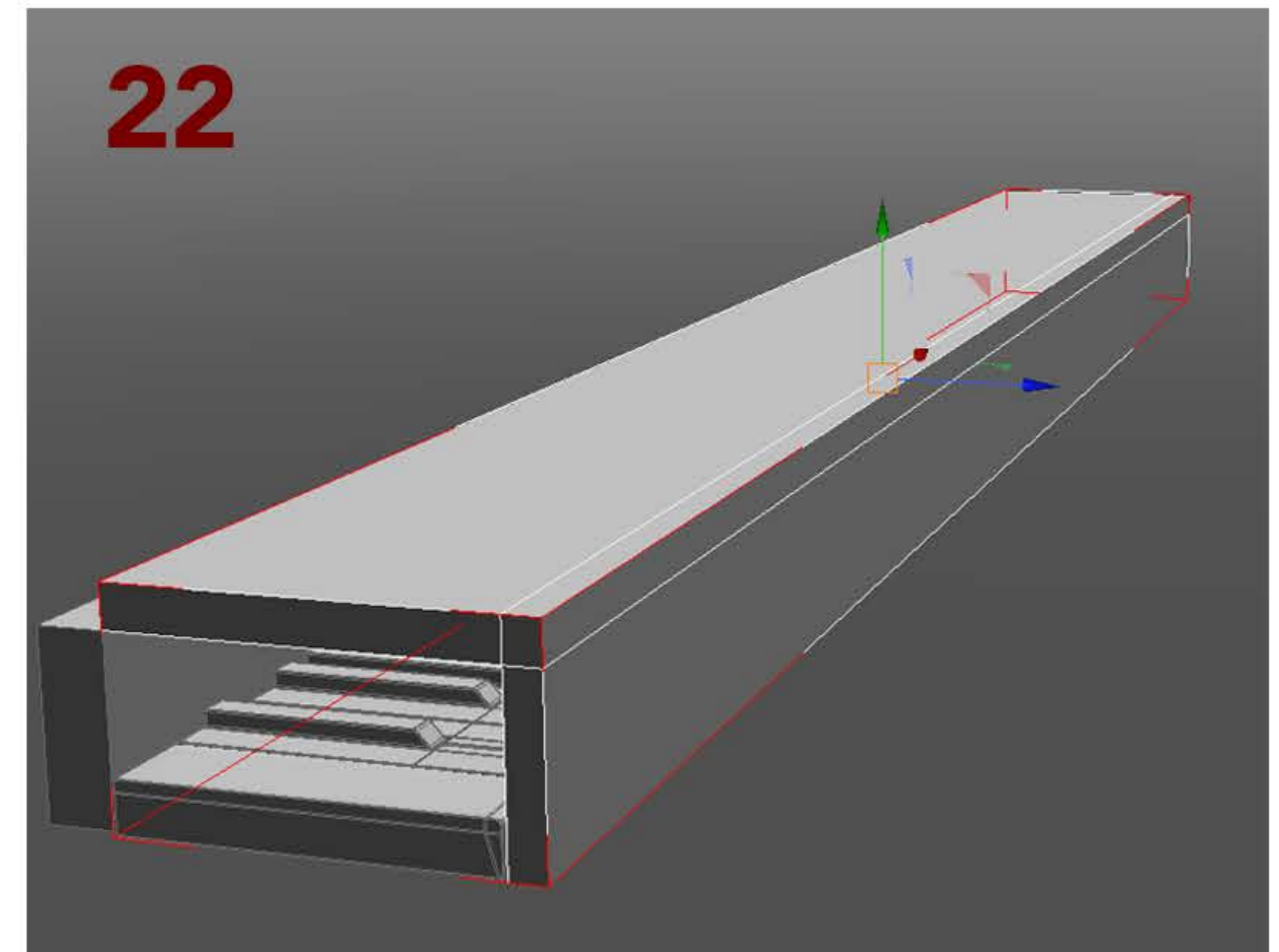




9. It's time to work on the keyboard's lid. First, just place a box behind the keyboard. No need to use the open subdivision this time because we will not see the edges of the box (picture 21).

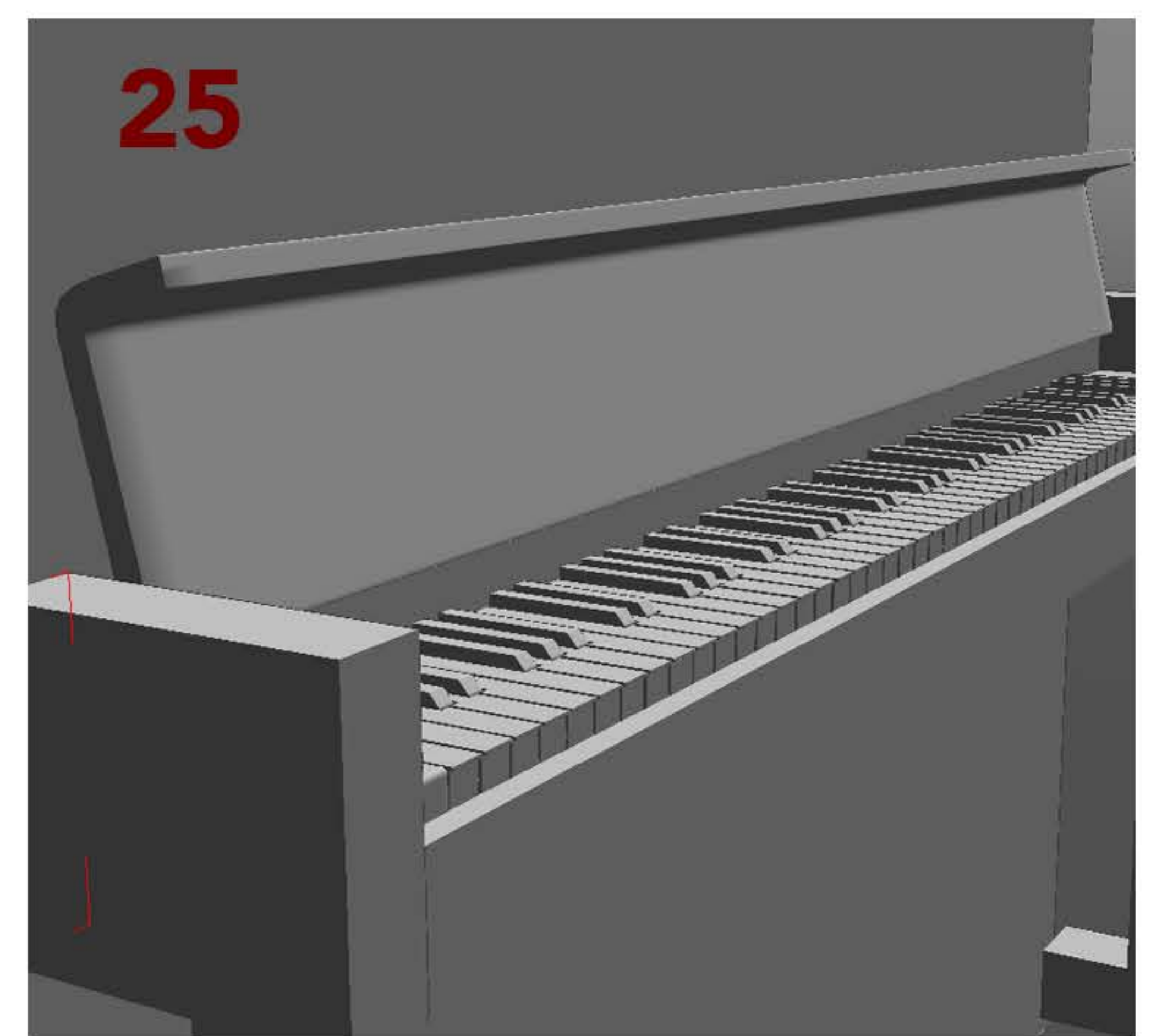
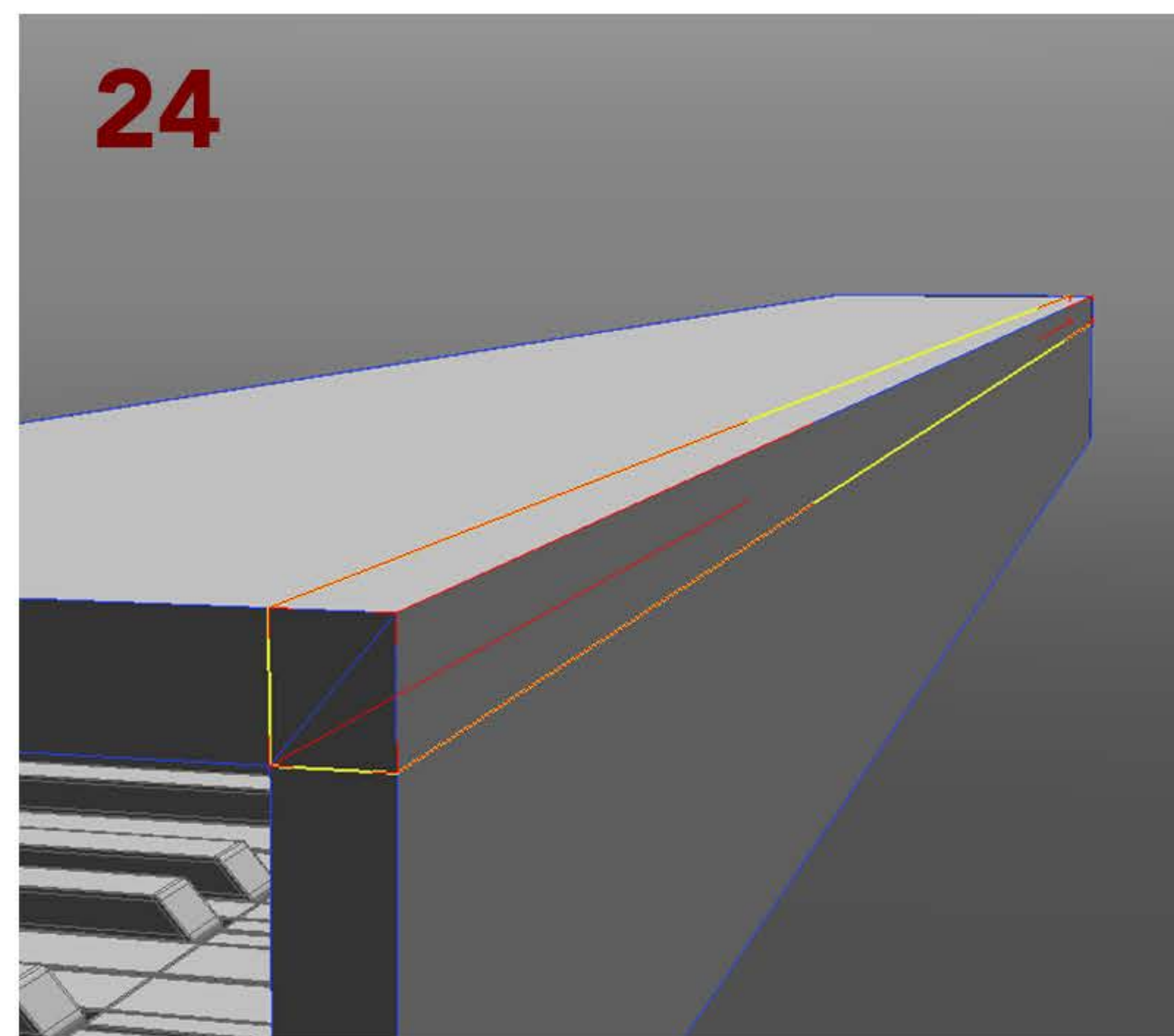
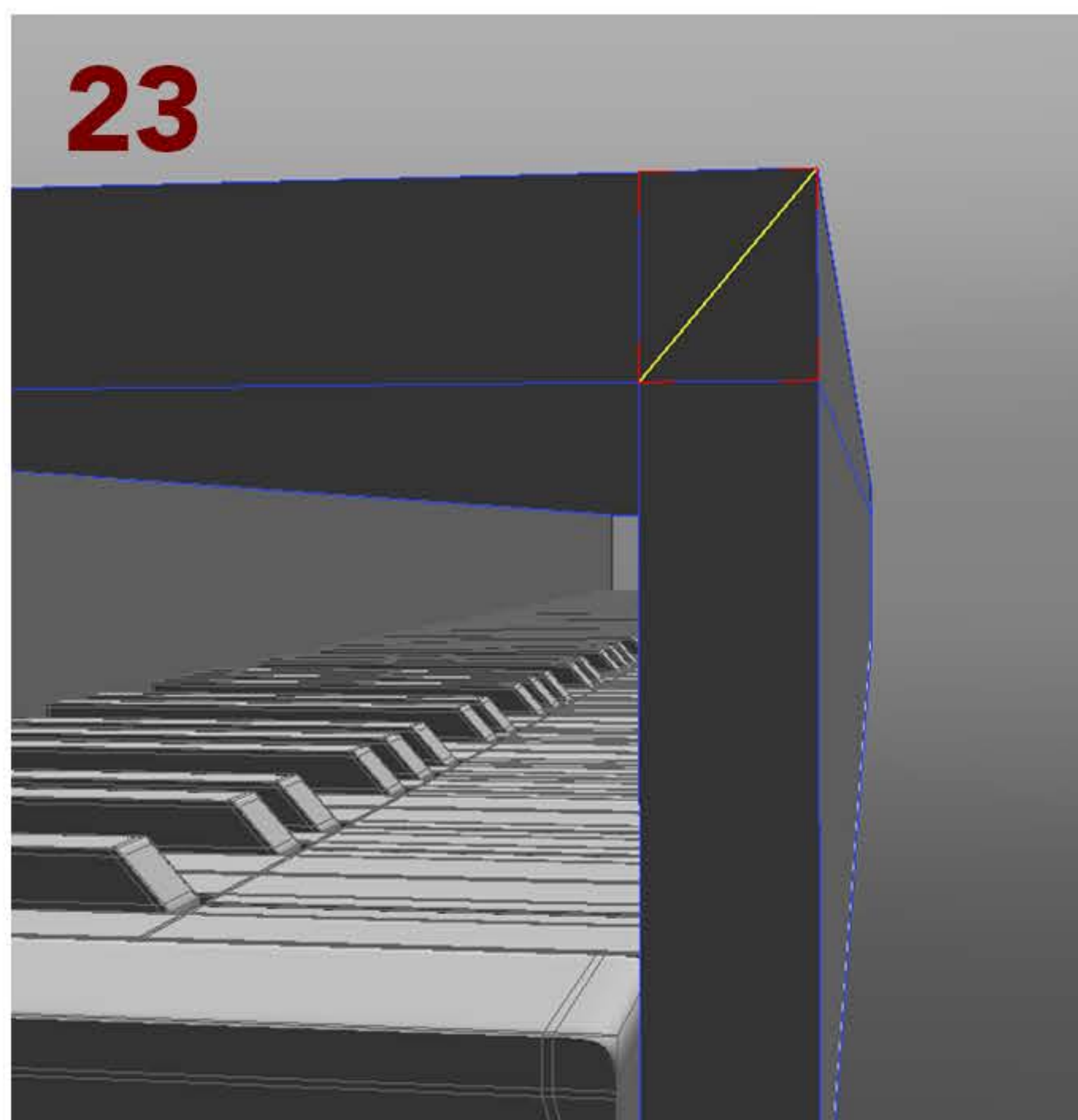


For the lid, because it is more convenient, we will do it in the closed position. First, we place the box on the top of the keyboard, like it would be if it was closed. We add an edge with the slice loop tool, then, we do an extrusion until the edge get of the keyboard (picture 22).



Next, with the "Add edge to Polygon Mesh tool", we connect the two vertices on both side (picture 23) and we delete the additional edges (picture 24). **That way, the topology will be better for a clean and round edge.**

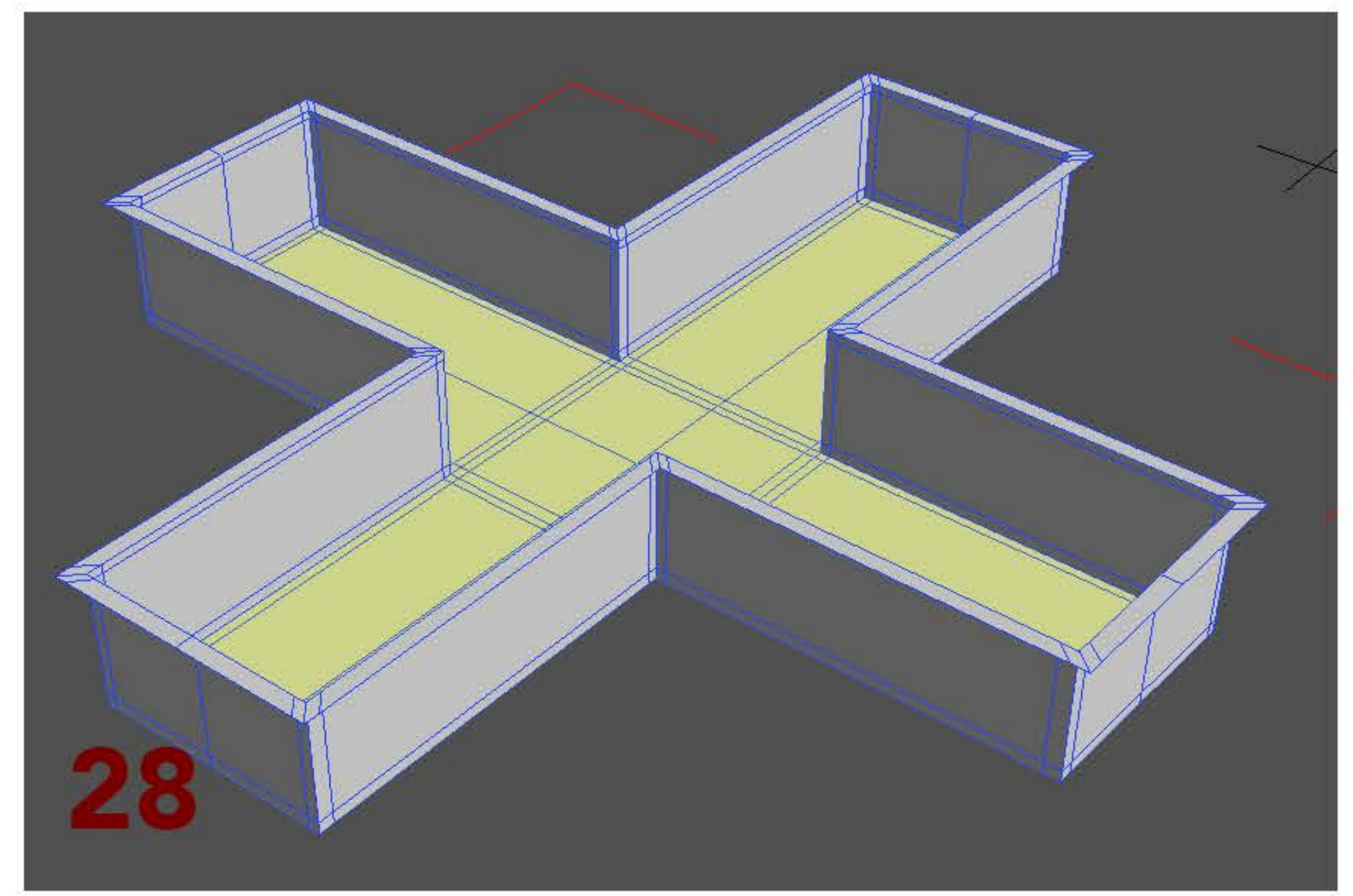
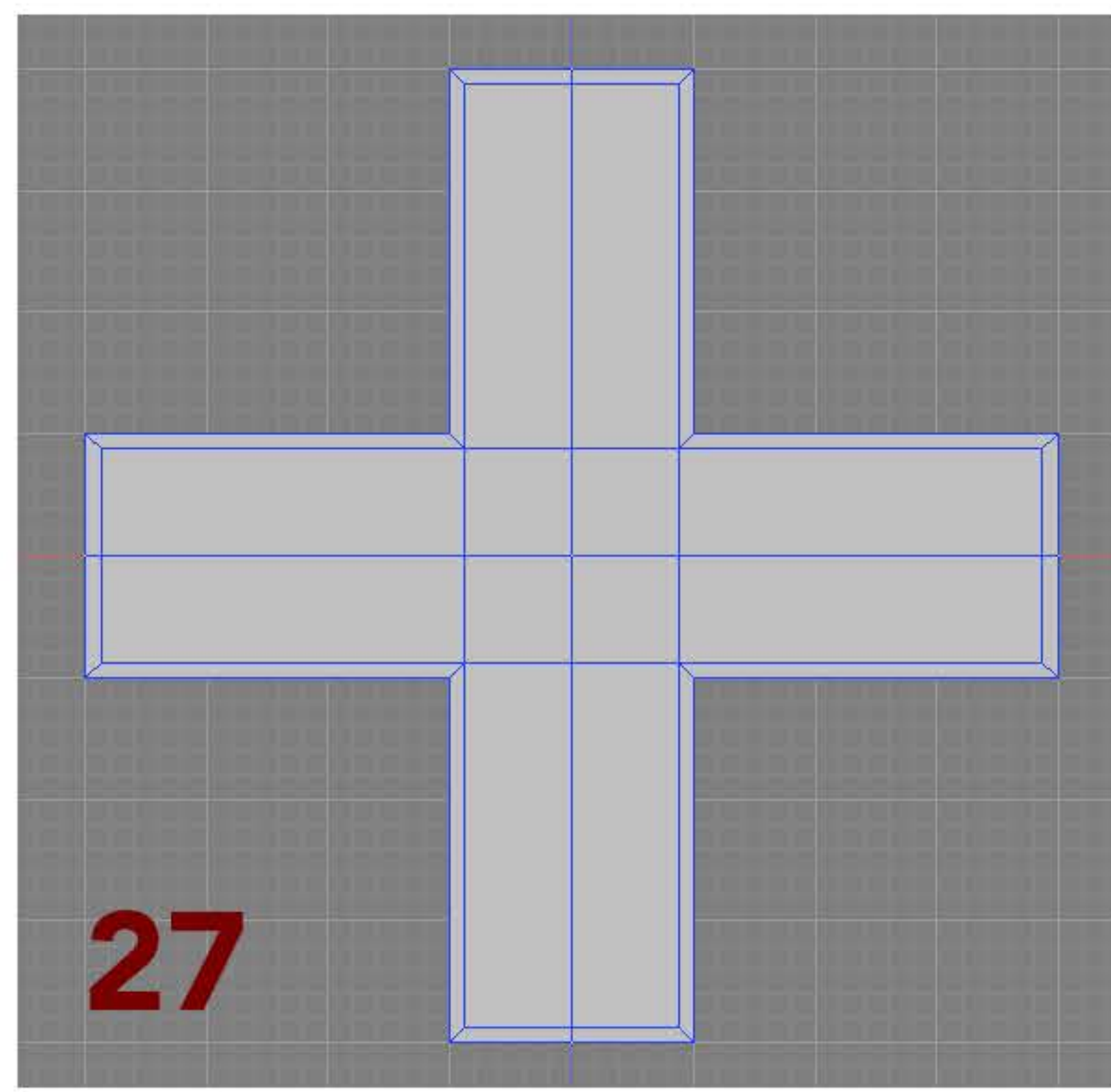
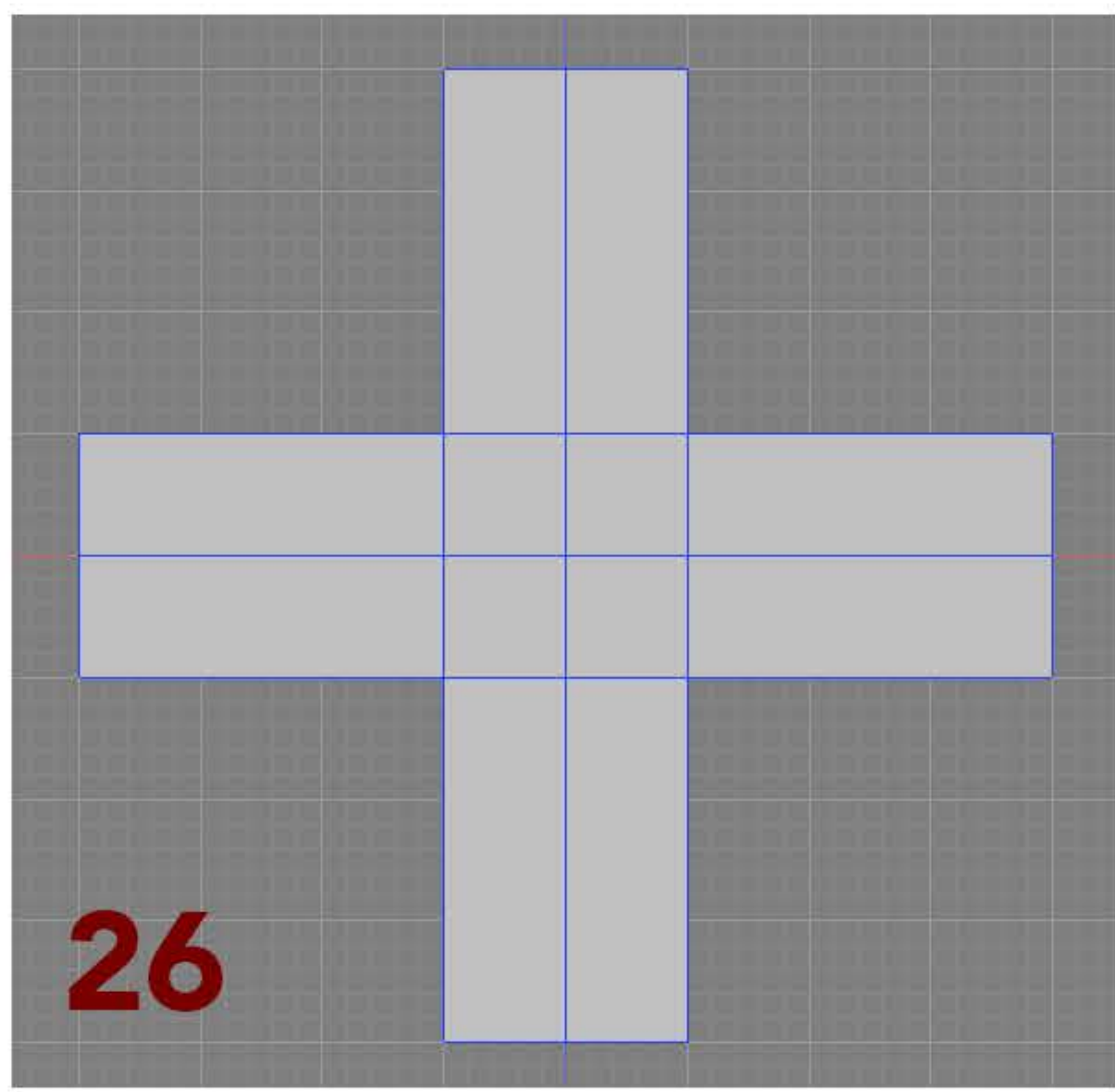
After that, like for the other part, add some edges for the open subdivision mode (picture 25). Then, we can open the lid and finish this part.



10. Now we need to make the join the lid's join. We need to do a screw for that or at least, the head of a screw.

First, we start with a simple flat cross pattern like on the picture (picture 26 on the following page). Then, we do an inset with the bevel tool on the inside of the cross (picture 27 on the following page). Use this inset to do an extrusion for the cross part of the screw. Now, we just have to add some edges for the open subdivision mode (we will not use the open subdivision mode right now, we just add the edges later - picture 28 on the following page).

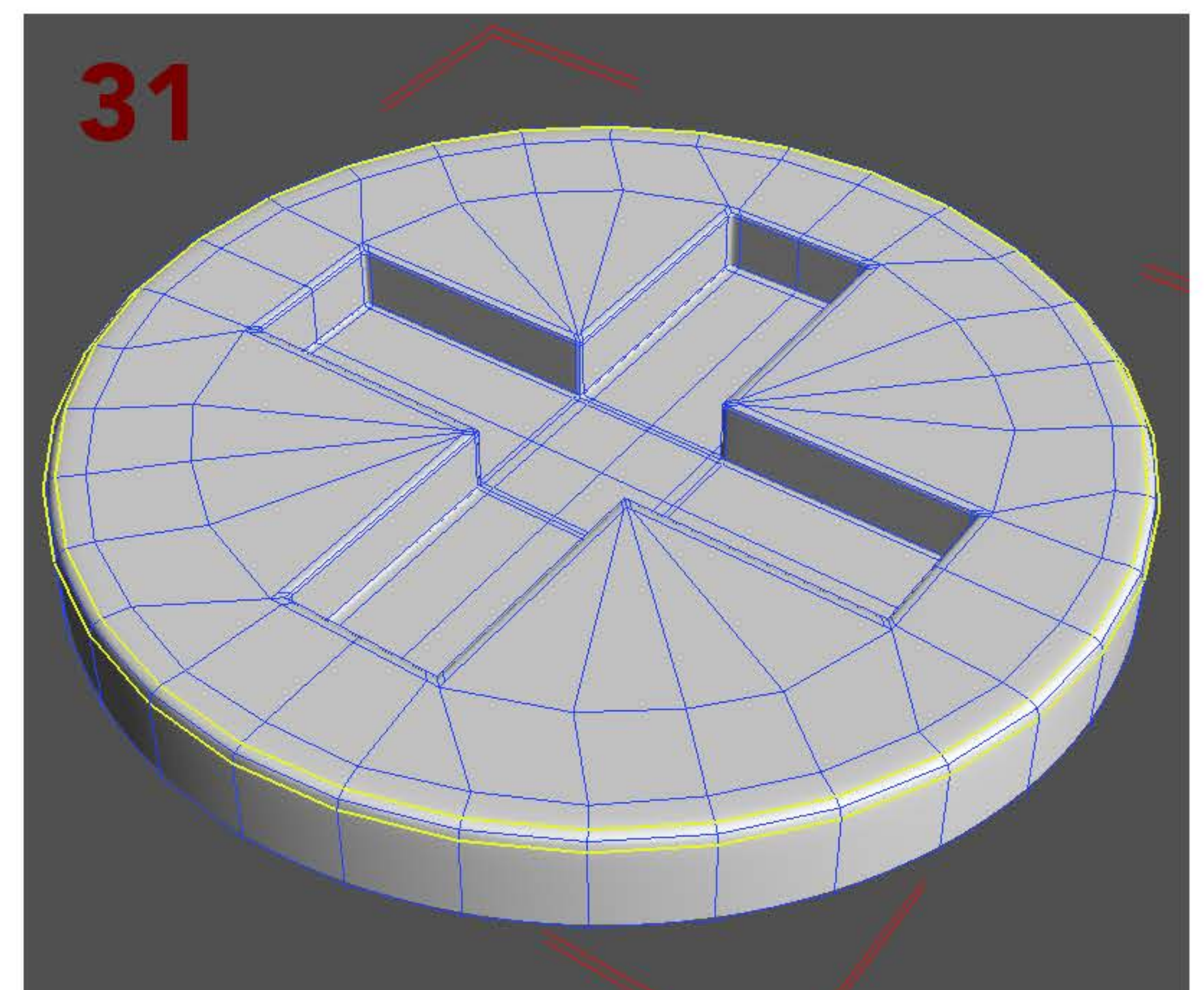
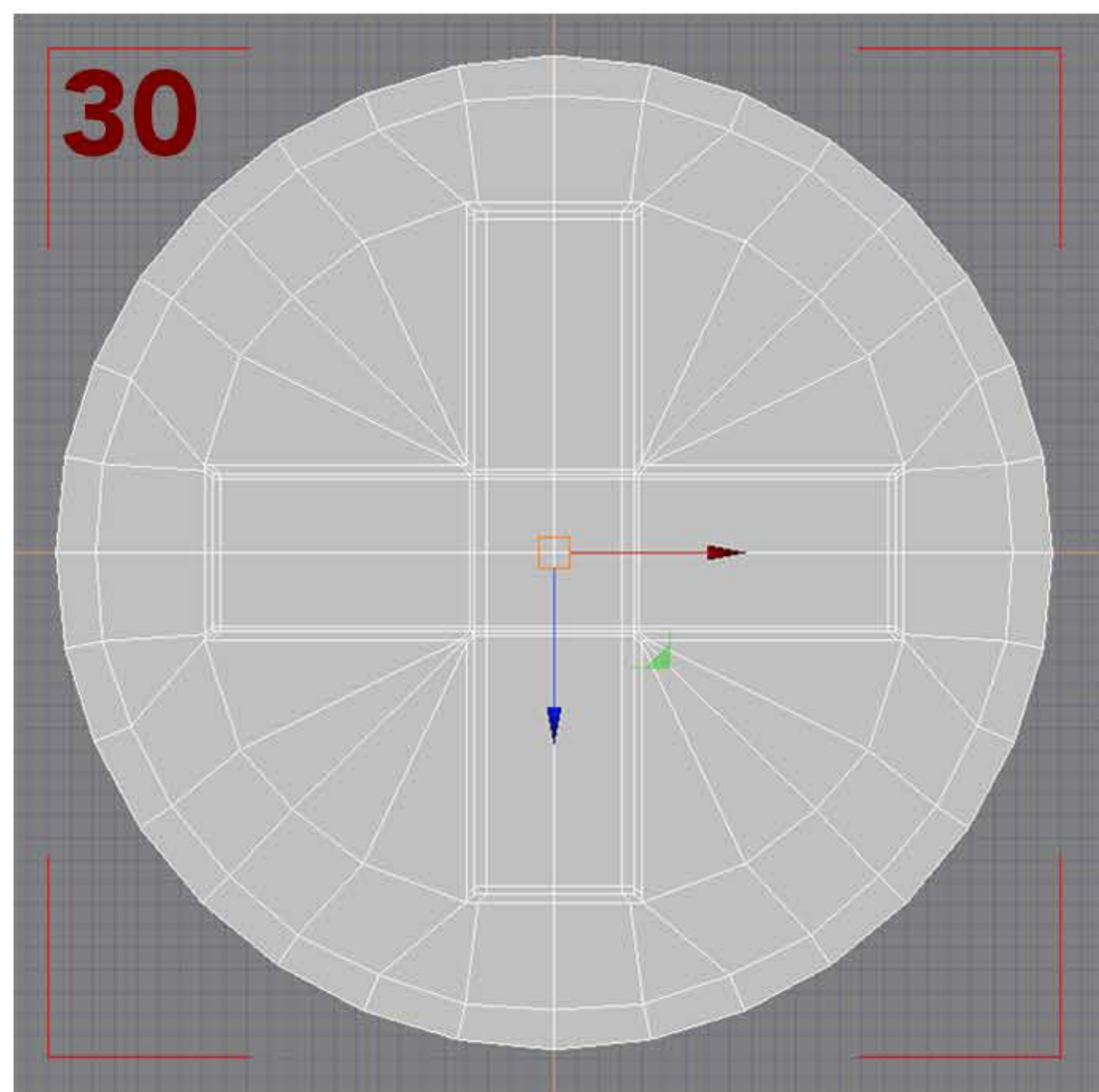
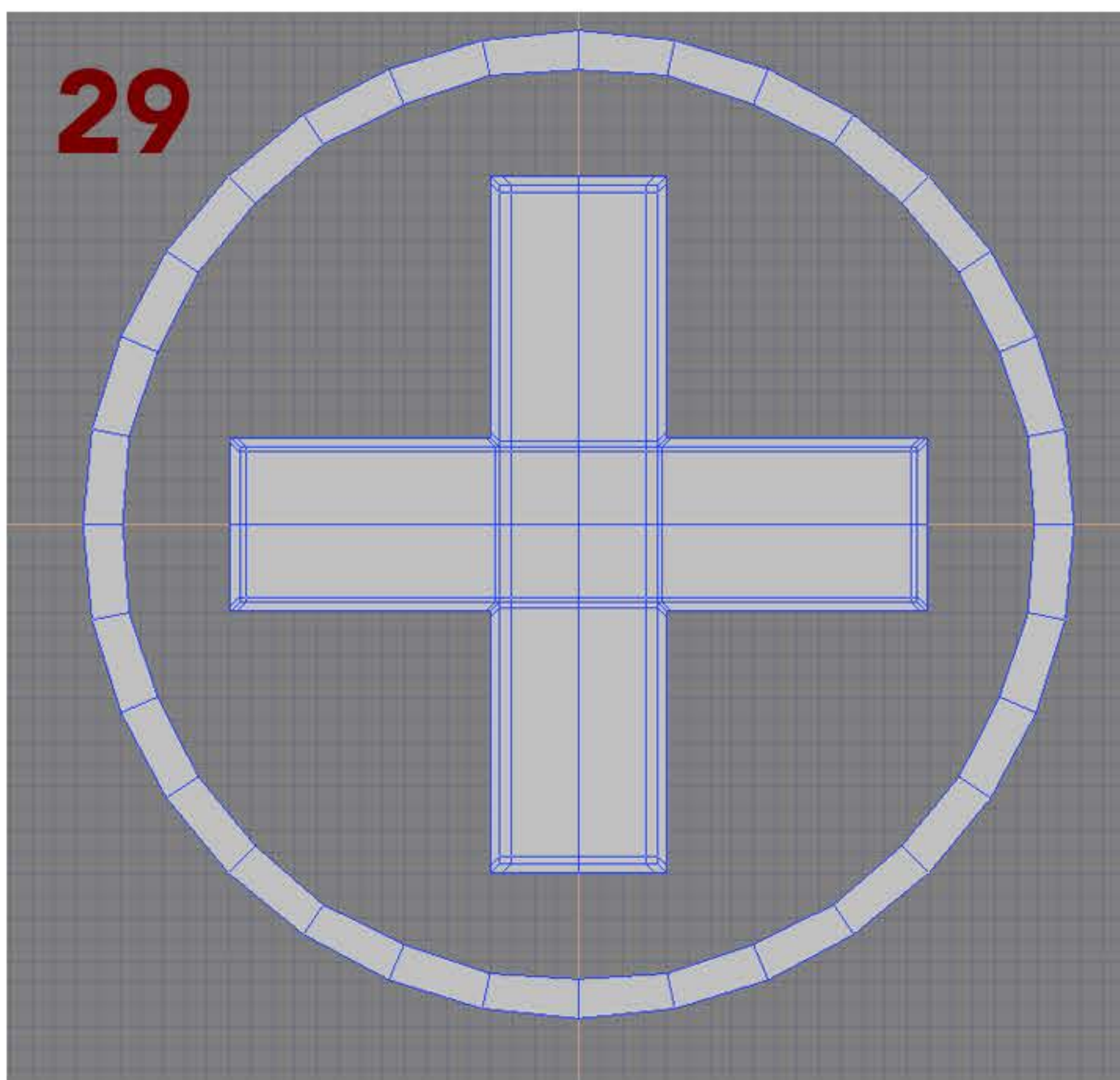




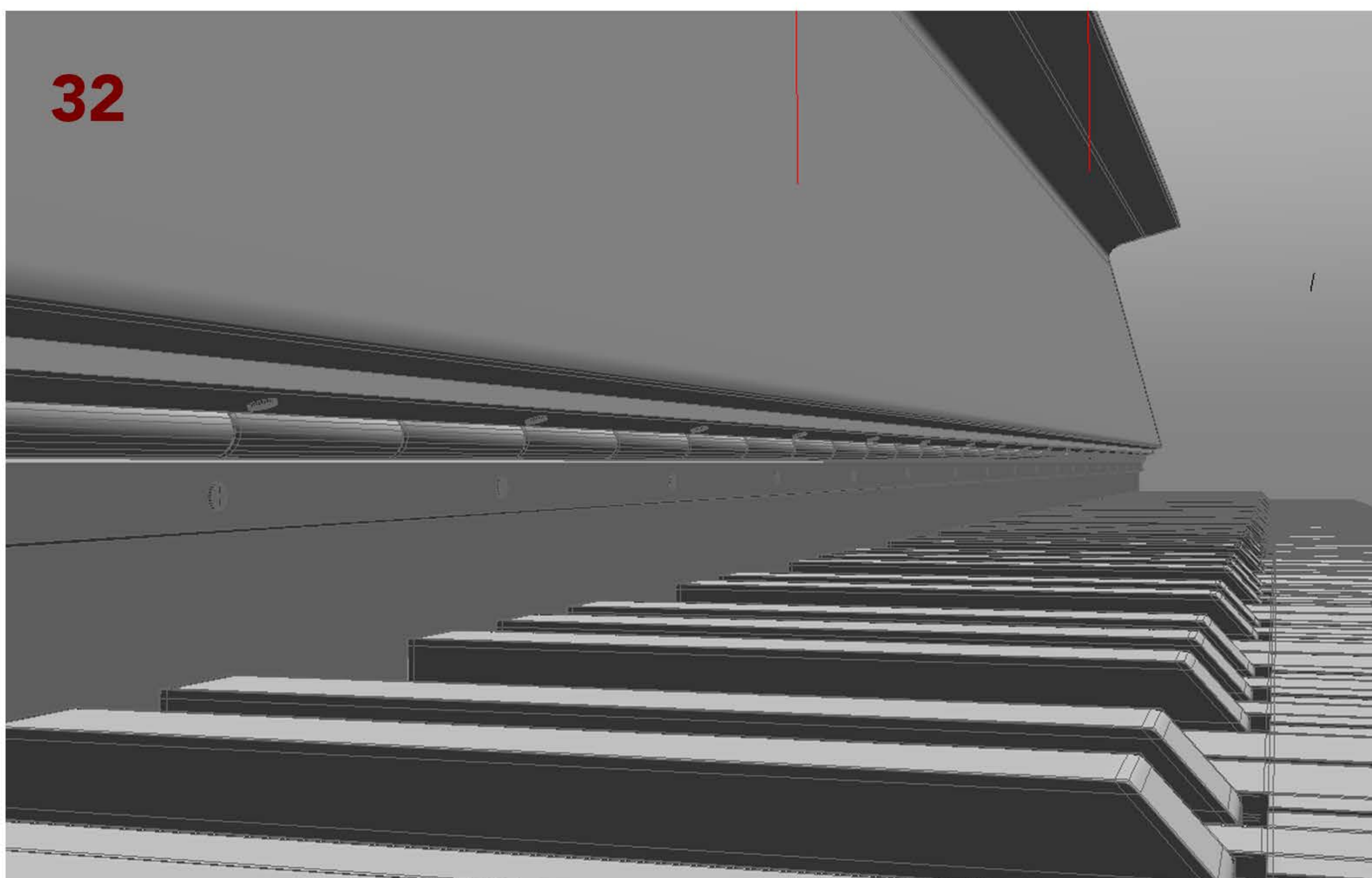
11. Now, we need to create a cylinder with 32 edges. Keep just the cap and use the bevel tool to make an inset and delete the central face. The cross as to be on the middle of the cylinder (picture 29). After that, select both the cross and the cylinder, and merge them in order to have only one mesh - like the keys of the keyboard.

Then, with a bridge tool and the append face tool, complete the whole with polygons, like on the picture 30. It is a little bit complicated, but there is no simple way to do a clean mesh for a screw.

After that, do an extrusion of the outer edge of the cylinder and do a bevel, like on the picture 31. The screw is now finished!



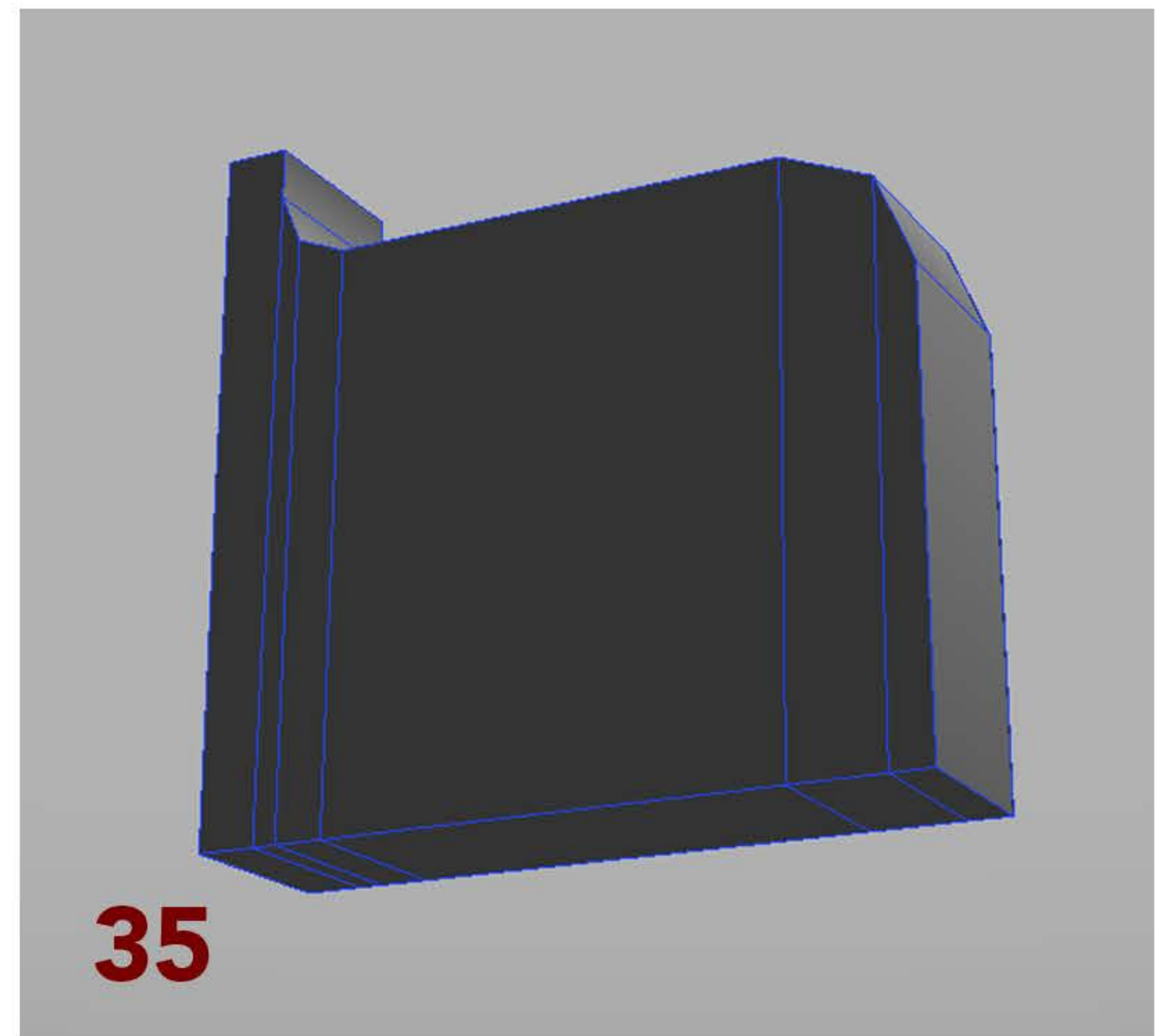
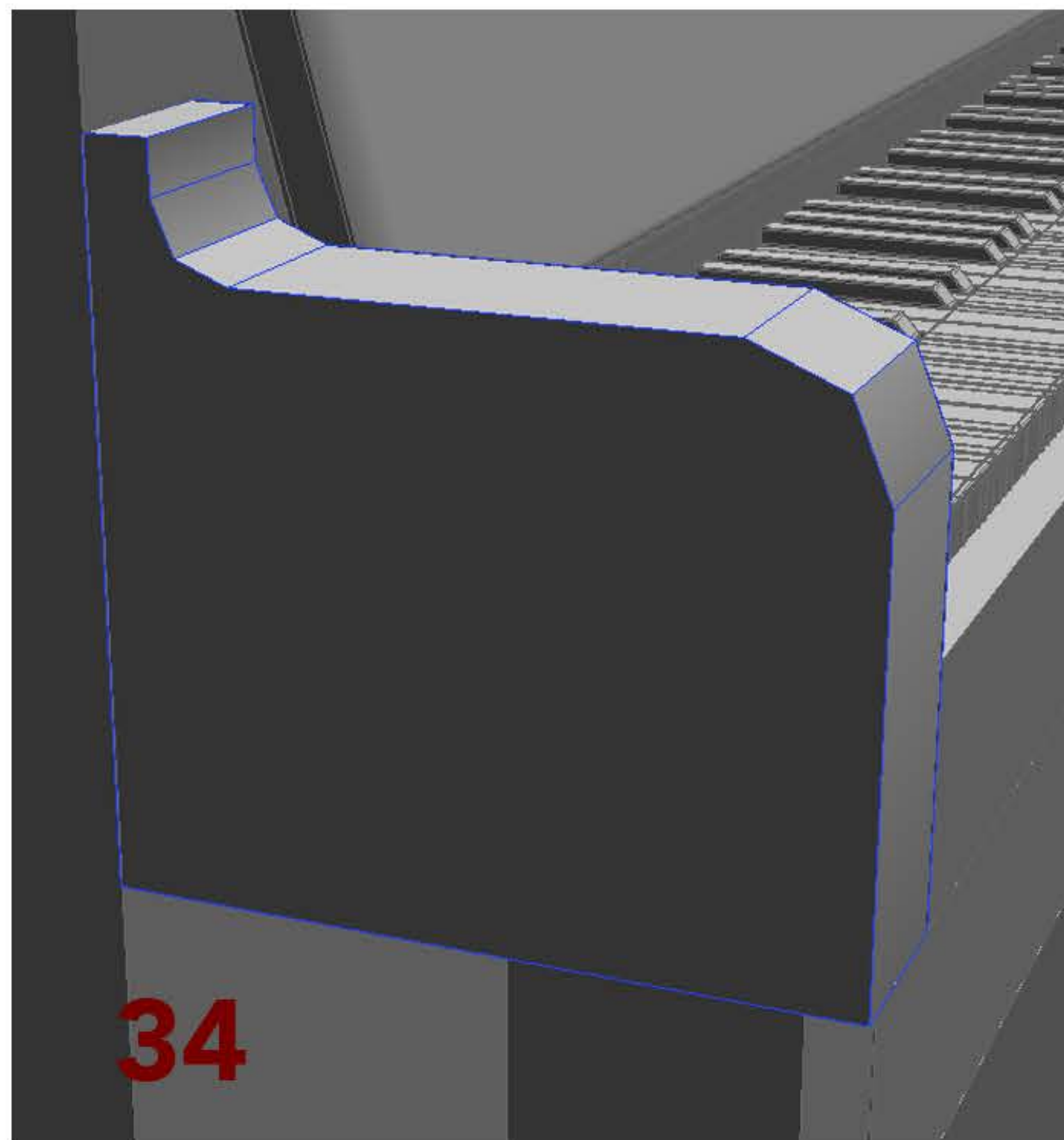
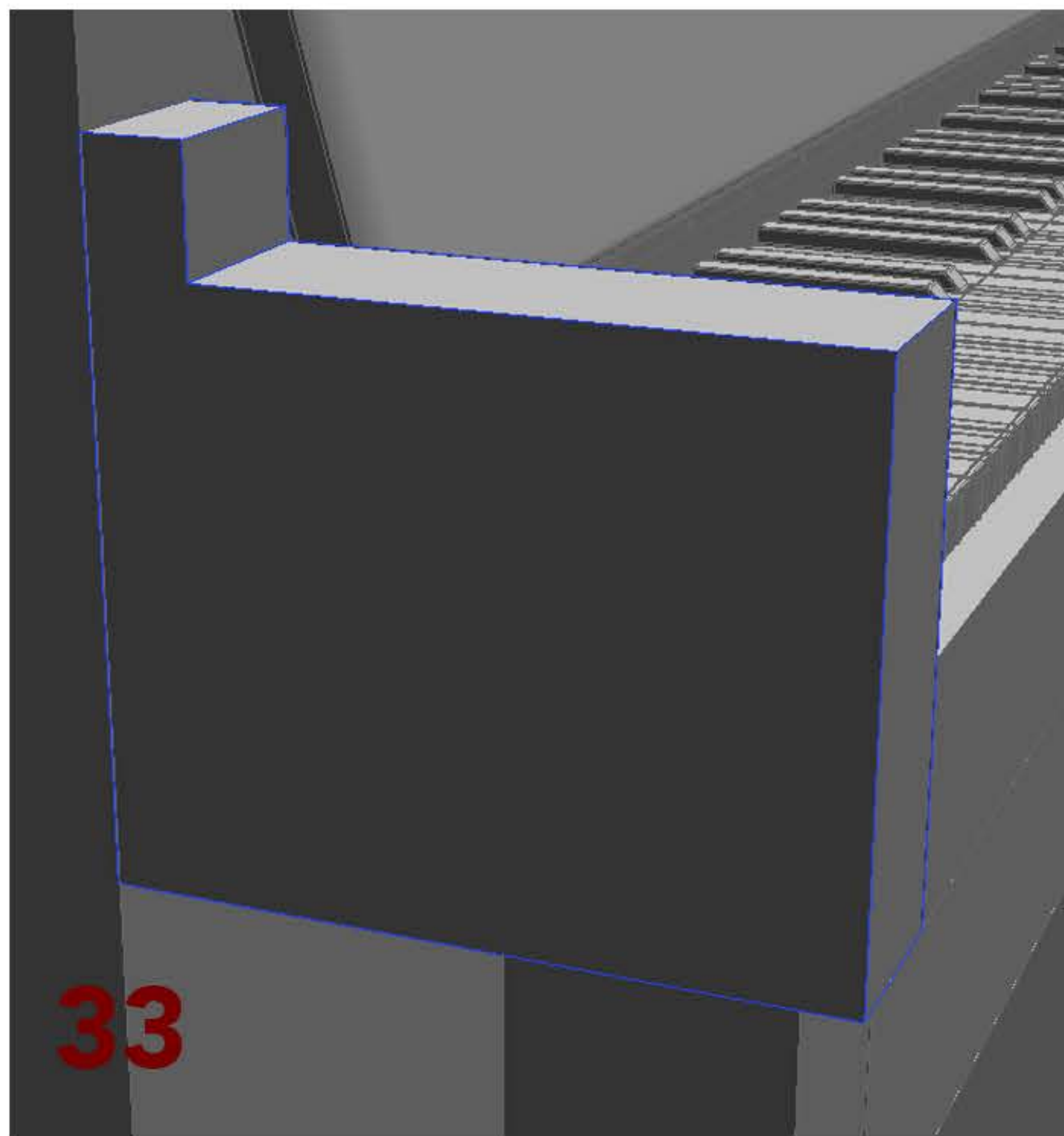
12. Finishing the cover of the keyboard is really simple. You just need two cube, and a serie cylinder for the joint, like on the picture 32. Once this is done, you can just put the screw on it. The lid is now finished!





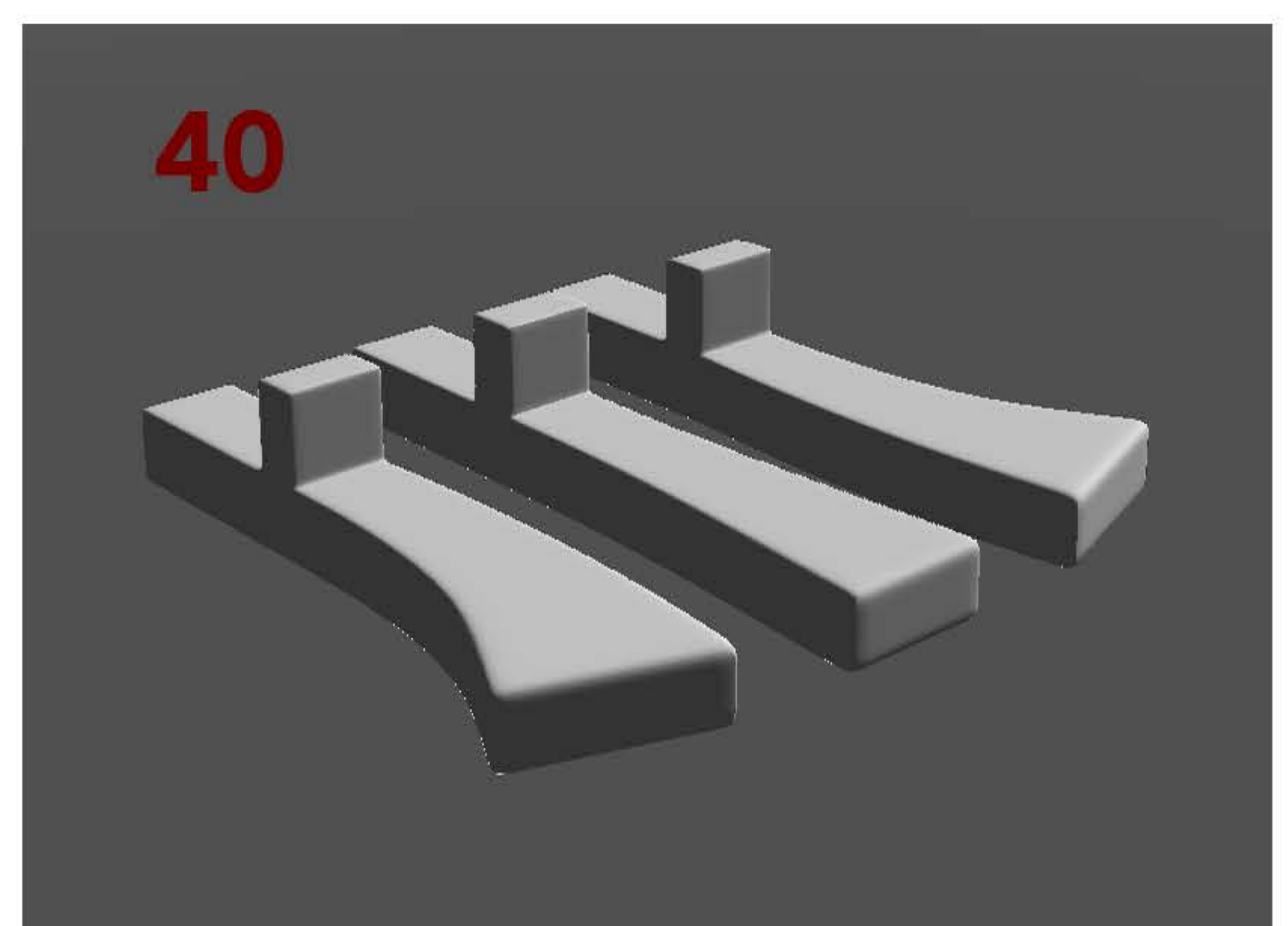
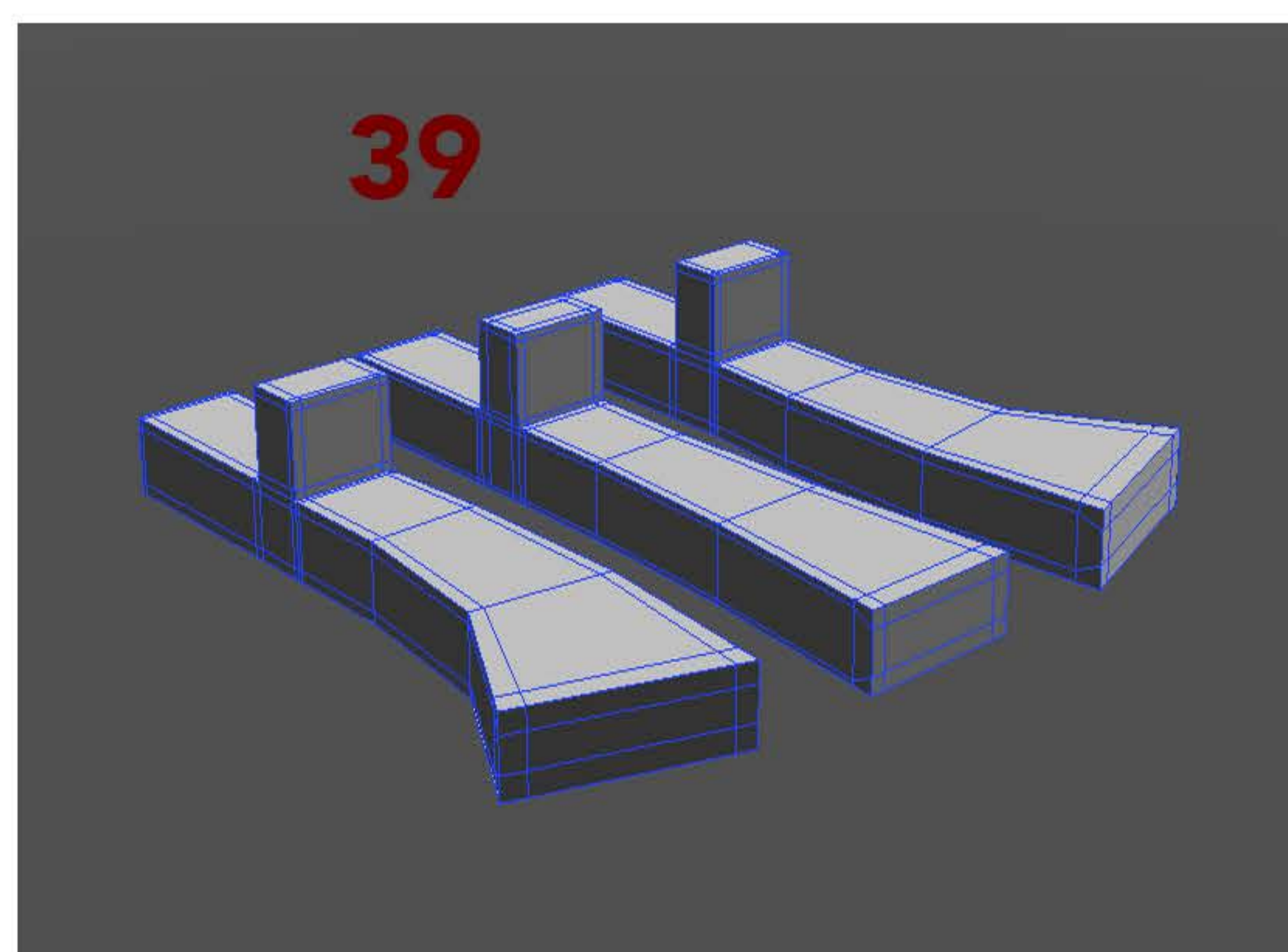
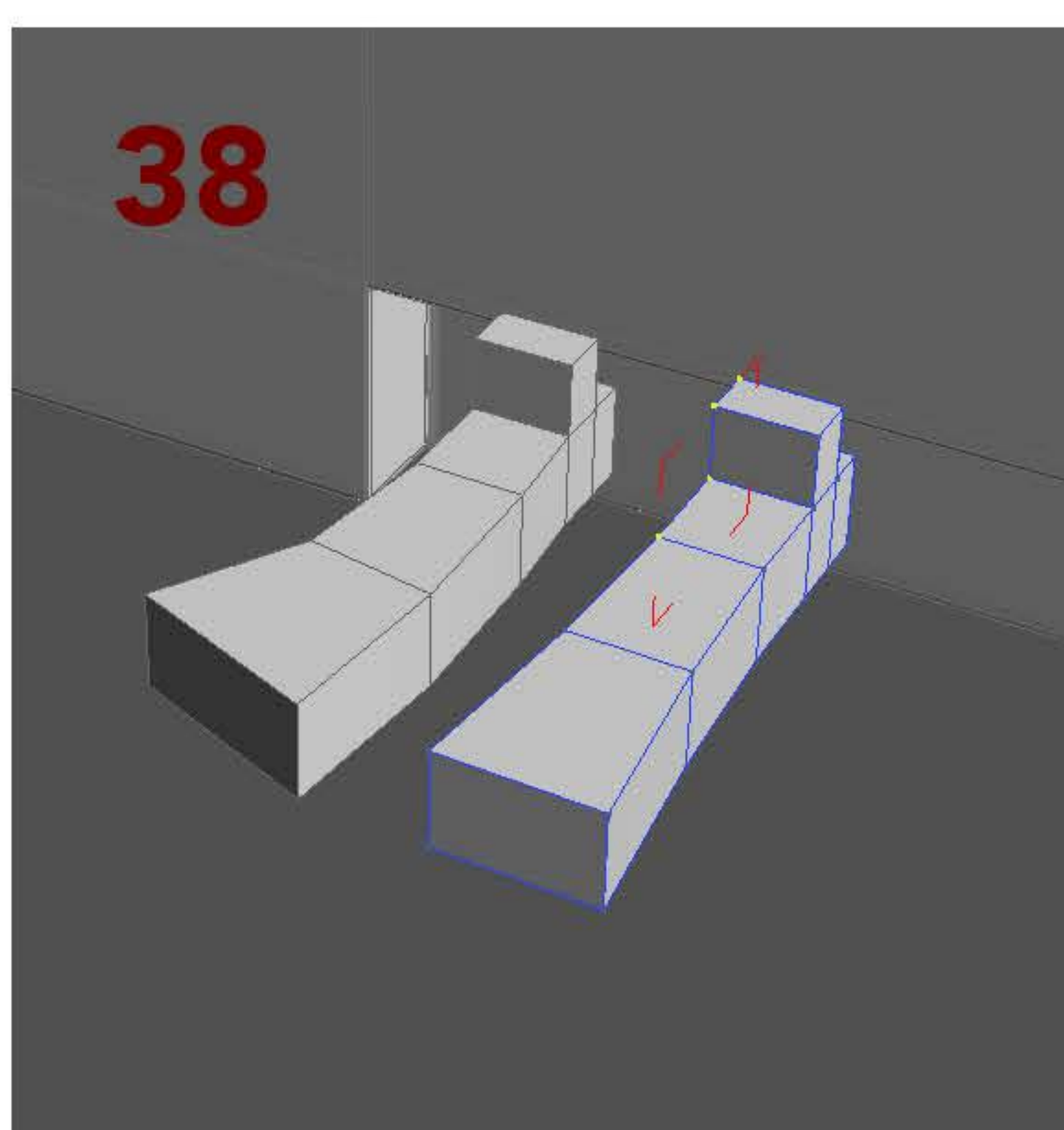
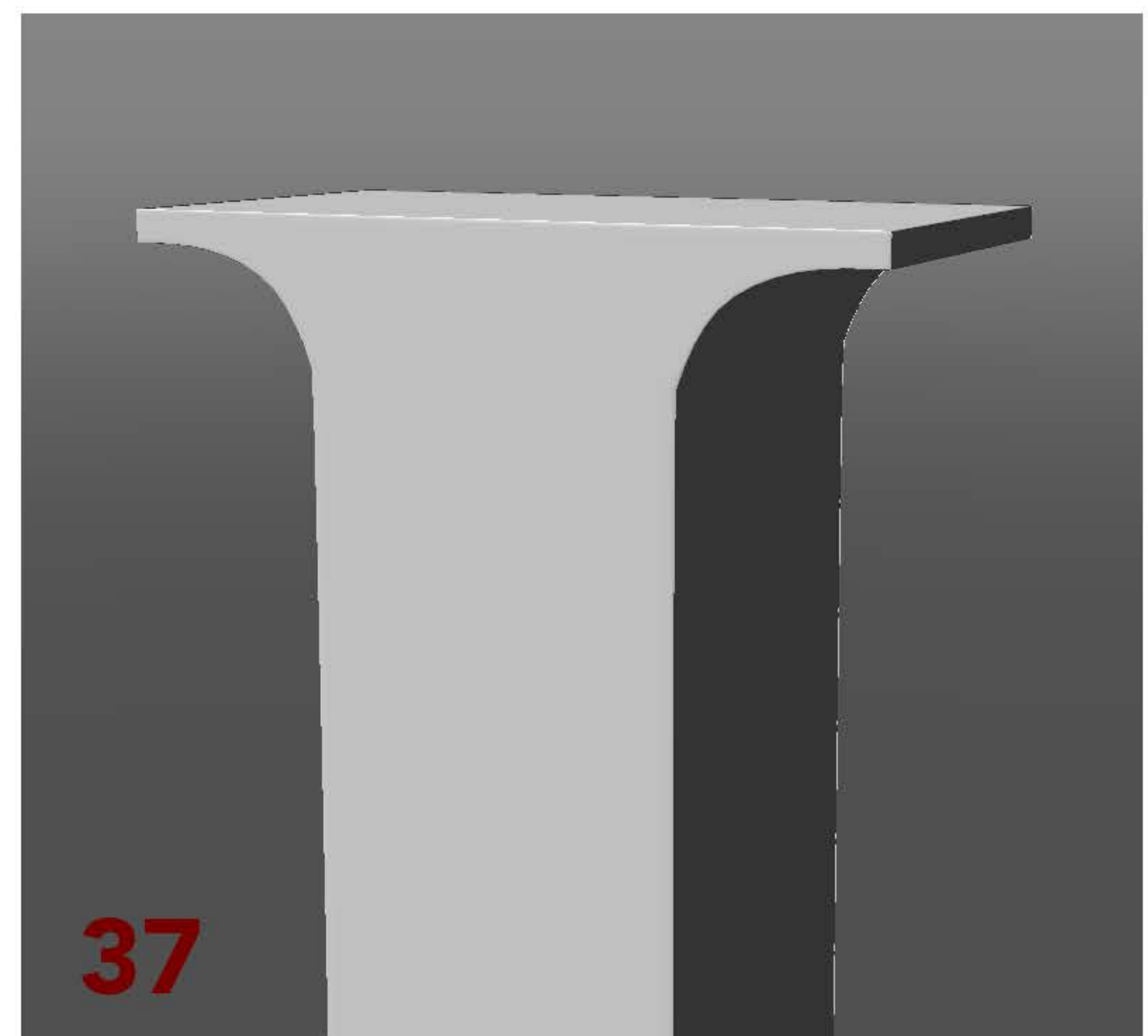
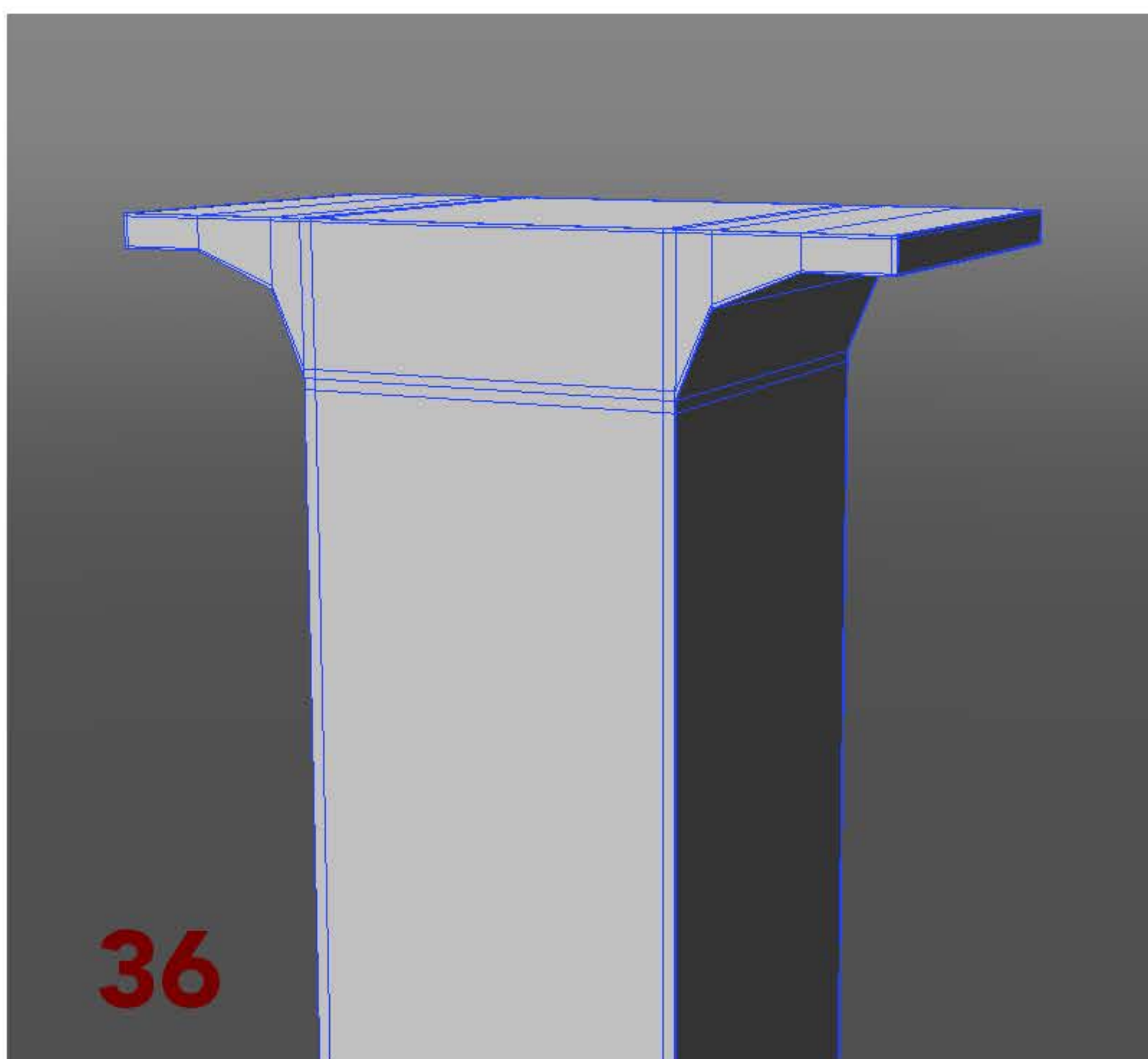
13. For the part on the side of the keyboard, just do an extrusion on the cube we already did for the blocking part (picture 33). Delete all the edges inside and do two bevels like in the picture (picture 34).

After that, we have to correct the wireframe and close that big N-gone. For that, use the loop tool on the bottom face and use the add edges to polygon mesh tool to link the edges between them (picture 35). Then, add some edges for the open subdivision mode.



14. For the next parts, this is the exact same process. Use the mesh we did for the blocking part. Use the extrude tool and the bevel tool to refine the shape (don't forget to use references to have a good shape!). Then, use the loop tool and the edges to polygon mesh to fix the wireframe. In order to finish the piece, add some edges for the open subdivision. The following picture shows the final wireframe of some of the piano's parts (picture 36 to 40).

With that method, you can finish all the piano's part. Just a little tip : you can use some part you already did. For example, for the lid of the piano (on the top part), is just two cubes and some cylinders for the join. You can use the join we did for the keyboard's lid!





15. The piano is now finished (picture 41 and 42).

